SSCP.560q

Number: SSCP
Passing Score: 800
Time Limit: 120 min

SSCP

Systems Security Certified Practitioner

Sections

1. Access Control
2. Security Operation Adimnistration
3. Analysis and Monitoring
4. Risk, Response and Recovery

Exam A

QUESTION 1
A potential problem related to the physical installation of the Iris Scanner in regards to the usage of the iris pattern within a biometric system is:

A. concern that the laser beam may cause eye damage
B. the iris pattern changes as a person grows older.
C. there is a relatively high rate of false accepts.
D. the optical unit must be positioned so that the sun does not shine into the aperture.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Because the optical unit utilizes a camera and infrared light to create the images, sun light can impact the aperture so it must not be positioned in direct light of any type. Because the subject does not need to have direct contact with the optical reader, direct light can impact the reader.
An Iris recognition is a form of biometrics that is based on the uniqueness of a subject's iris. A camera like device records the patterns of the iris creating what is known as Iriscode.
It is the unique patterns of the iris that allow it to be one of the most accurate forms of biometric identification of an individual. Unlike other types of biometics, the iris rarely changes over time. Fingerprints can change over time due to scaring and manual labor, voice patterns can change due to a variety of causes, hand geometry can also change as well. But barring surgery or an accident it is not usual for an iris to change. The subject has a high-resoulution image taken of their iris and this is then converted to Iriscode. The current standard for the Iriscode was developed by John Daugman. When the subject attempts to be authenticated an infrared light is used to capture the iris image and this image is then compared to the Iriscode. If there is a match the subject's identity is confirmed. The subject does not need to have direct contact with the optical reader so it is a less invasive means of authentication then retinal scanning would be.

Reference(s) used for this question:
AIO, 3rd edition, Access Control, p 134.
AIO, 4th edition, Access Control, p 182.
Wikipedia - http://en.wikipedia.org/wiki/Iris_recognition

The following answers are incorrect:

concern that the laser beam may cause eye damage. The optical readers do not use laser so, concern that the laser beam may cause eye damage is not an issue.
the iris pattern changes as a person grows older. The question asked about the physical installation of the scanner, so this was not the best answer. If the question would have been about long term problems then it could have been the best choice. Recent research has shown that Irises actually do change over time: http://www.nature.com/news/ageing-eyes-hinder-biometric-scans-1.10722

there is a relatively high rate of false accepts. Since the advent of the Iriscode there is a very low rate of false accepts, in fact the algorithm used has never had a false match. This all depends on the quality of the equipment used but because of the uniqueness of the iris even when comparing identical twins, iris patterns are unique.

QUESTION 2
In Mandatory Access Control, sensitivity labels attached to object contain what information?

A. The item's classification
B. The item's classification and category set
C. The item's category
D. The items's need to know

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
A Sensitivity label must contain at least one classification and one category set.
Category set and Compartment set are synonyms, they mean the same thing. The sensitivity label must contain at least one Classification and at least one Category. It is common in some environments for a single item to belong to multiple categories. The list of all the categories to which an item belongs is called a compartment set or category set. The following answers are incorrect:

the item's classification. Is incorrect because you need a category set as well.
the item's category. Is incorrect because category set and classification would be both be required.
The item's need to know. Is incorrect because there is no such thing. The need to know is indicated by the catergories the object belongs to. This is NOT the best answer.

Reference(s) used for this question:

OIG CBK, Access Control (pages 186 - 188) AIO,
3rd Edition, Access Control (pages 162 - 163)
AIO, 4th Edittion, Access Control, pp 212-214.

Wikipedia - http://en.wikipedia.org/wiki/Mandatory_Access_Control

QUESTION 3
What are the components of an object's sensitivity label?

A. A Classification Set and a single Compartment.
B. A single classification and a single compartment.
C. A Classification Set and user credentials.
D. A single classification and a Compartment Set.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Both are the components of a sensitivity label.

The following are incorrect:

A Classification Set and a single Compartment. Is incorrect because the nomenclature "Classification Set" is incorrect, there only one classifcation and it is not a "single compartment" but a Compartment Set.

A single classification and a single compartment. Is incorrect because while there only is one classifcation, it is not a "single compartment" but a Compartment Set.

A Classification Set and user credentials. Is incorrect because the nomenclature "Classification Set" is incorrect, there only one classifcation and it is not "user credential" but a Compartment Set. The user would have their own sensitivity label.

QUESTION 4
What does it mean to say that sensitivity labels are "incomparable"?

A. The number of classification in the two labels is different.
B. Neither label contains all the classifications of the other.
C. the number of categories in the two labels are different.
D. Neither label contains all the categories of the other.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
If a category does not exist then you cannot compare it. Incomparable is when you have two disjointed sensitivity labels, that is a category in one of the labels is not in the other label. "Because neither label contains all the categories of the other, the labels can't be compared. They're said to be incomparable"
COMPARABILITY:
The label:

TOP SECRET [VENUS ALPHA]

is "higher" than either of the labels:

SECRET [VENUS ALPHA] TOP SECRET [VENUS]
But you can't really say that the label:

TOP SECRET [VENUS] is
higher than the label:

SECRET [ALPHA]
Because neither label contains all the categories of the other, the labels can't be compared. They're said to be incomparable. In a mandatory access control system, you won't be allowed access to a file whose label is incomparable to your clearance.

The Multilevel Security policy uses an ordering relationship between labels known as the dominance relationship. Intuitively, we think of a label that dominates another as being "higher" than the other. Similarly, we think of a label that is dominated by another as being "lower" than the other. The dominance relationship is used to determine permitted operations and information flows.

DOMINANCE
The dominance relationship is determined by the ordering of the Sensitivity/Clearance component of the label and the intersection of the set of Compartments.

Sample Sensitivity/Clearance ordering are:

Top Secret > Secret > Confidential > Unclassified
s3 > s2 > s1 > s0

Formally, for label one to dominate label 2 both of the following must be true:

The sensitivity/clearance of label one must be greater than or equal to the sensitivity/clearance of label two.
The intersection of the compartments of label one and label two must equal the compartments of label two.

Additionally:

Two labels are said to be equal if their sensitivity/clearance and set of compartments are exactly equal. Note that dominance includes equality.
One label is said to strictly dominate the other if it dominates the other but is not equal to the other.
Two labels are said to be incomparable if each label has at least one compartment that is not included in the other's set of compartments.

The dominance relationship will produce a partial ordering over all possible MLS labels, resulting in what is known as the MLS Security Lattice.

The following answers are incorrect:

The number of classification in the two labels is different. Is incorrect because the categories are what is being compared, not the classifications.

Neither label contains all the classifications of the other. Is incorrect because the categories are what is being compared, not the classifications.

the number of categories in the two labels is different. Is incorrect because it is possibe a category exists more than once in one sensitivity label and does exist in the other so they would be comparable.

Reference(s) used for this question:

OReilly - Computer Systems and Access Control (Chapter 3) http://www.oreilly.com/catalog/csb/chapter/ch03.html and http://rubix.com/cms/mls_dom

QUESTION 5
Which of the following is true about Kerberos?

A. It utilizes public key cryptography.
B. It encrypts data after a ticket is granted, but passwords are exchanged in plain text.
C. It depends upon symmetric ciphers.
D. It is a second party authentication system.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Kerberos depends on secret keys (symmetric ciphers). Kerberos is a third party authentication protocol. It was designed and developed in the mid 1980's by MIT. It is considered open source but is copyrighted and owned by MIT. It relies on the user's secret keys. The password is used to encrypt and decrypt the keys.

The following answers are incorrect:

It utilizes public key cryptography. Is incorrect because Kerberos depends on secret keys (symmetric ciphers).

It encrypts data after a ticket is granted, but passwords are exchanged in plain text. Is incorrect because the passwords are not exchanged but used for encryption and decryption of the keys.

It is a second party authentication system. Is incorrect because Kerberos is a third party authentication system, you authenticate to the third party (Kerberos) and not the system you are accessing.

References:

MIT http://web.mit.edu/kerberos/
Wikipedi http://en.wikipedia.org/wiki/Kerberos_%28protocol%29

OIG CBK Access Control (pages 181 - 184)
AIOv3 Access Control (pages 151 - 155)

QUESTION 6
Which of the following is needed for System Accountability?

A. Audit mechanisms.
B. Documented design as laid out in the Common Criteria.
C. Authorization.
D. Formal verification of system design.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Is a means of being able to track user actions. Through the use of audit logs and other tools the user actions are recorded and can be used at a later date to verify what actions were performed.

Accountability is the ability to identify users and to be able to track user actions.

The following answers are incorrect:

Documented design as laid out in the Common Criteria. Is incorrect because the Common Criteria is an international standard to evaluate trust and would not be a factor in System Accountability.

Authorization. Is incorrect because Authorization is granting access to subjects, just because you have authorization does not hold the subject accountable for their actions.

Formal verification of system design. Is incorrect because all you have done is to verify the system design and have not taken any steps toward system accountability.

References:
OIG CBK Glossary (page 778)

QUESTION 7
What is Kerberos?

A. A three-headed dog from the egyptian mythology.
B. A trusted third-party authentication protocol.
C. A security model.
D. A remote authentication dial in user server.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Is correct because that is exactly what Kerberos is.

The following answers are incorrect:

A three-headed dog from Egyptian mythology. Is incorrect because we are dealing with Information Security and not the Egyptian mythology but the Greek Mythology.

A security model. Is incorrect because Kerberos is an authentication protocol and not just a security model.

A remote authentication dial in user server. Is incorrect because Kerberos is not a remote authentication dial in user server that would be called RADIUS.

QUESTION 8
The three classic ways of authenticating yourself to the computer security software are by something you know, by something you have, and by something:

A. you need.
B. non-trivial
C. you are.

D. you can get.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
This is more commonly known as biometrics and is one of the most accurate ways to authenticate an individual.

The rest of the answers are incorrect because they not one of the three recognized forms for Authentication.

QUESTION 9
A timely review of system access audit records would be an example of which of the basic security functions?

A. avoidance.
B. deterrence.
C. prevention.
D. detection.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
By reviewing system logs you can detect events that have occured.

The following answers are incorrect:

avoidance. This is incorrect, avoidance is a distractor. By reviewing system logs you have not avoided anything. deterrence. This is incorrect because system logs are a history of past events. You cannot deter something that has already occurred. prevention. This is incorrect because system logs are a history of past events. You cannot prevent something that has already occurred.

QUESTION 10
A confidential number used as an authentication factor to verify a user's identity is called a:

A. PIN
B. User ID

C. Password
D. Challenge

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
PIN Stands for Personal Identification Number, as the name states it is a combination of numbers.

The following answers are incorrect:
User ID This is incorrect because a Userid is not required to be a number and a Userid is only used to establish identity not verify it.

Password. This is incorrect because a password is not required to be a number, it could be any combination of characters.

Challenge. This is incorrect because a challenge is not defined as a number, it could be anything.

QUESTION 11
Which of the following exemplifies proper separation of duties?

A. Operators are not permitted modify the system time.
B. Programmers are permitted to use the system console.
C. Console operators are permitted to mount tapes and disks.
D. Tape operators are permitted to use the system console.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
This is an example of Separation of Duties because operators are prevented from modifying the system time which could lead to fraud. Tasks of this nature should be performed by they system administrators.

AIO defines Separation of Duties as a security principle that splits up a critical task among two or more individuals to ensure that one person cannot complete a risky task by himself.

The following answers are incorrect:
Programmers are permitted to use the system console. Is incorrect because programmers should not be permitted to use the system console, this task should be performed by operators. Allowing programmers access to the system console could allow fraud to occur so this is not an example of Separation of Duties..

Console operators are permitted to mount tapes and disks. Is incorrect because operators should be able to mount tapes and disks so this is not an example of Separation of Duties.

Tape operators are permitted to use the system console. Is incorrect because operators should be able to use the system console so this is not an example of Separation of Duties.

References:
OIG CBK Access Control (page 98 - 101)
AIOv3 Access Control (page 182)

QUESTION 12
Which of the following is not a logical control when implementing logical access security?

A. access profiles.
B. userids.
C. employee badges.
D. passwords.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Employee badges are considered Physical so would not be a logical control.

The following answers are incorrect:

userids. Is incorrect because userids are a type of logical control.
access profiles. Is incorrect because access profiles are a type of logical control.
passwords. Is incorrect because passwords are a type of logical control.

QUESTION 13
Which one of the following authentication mechanisms creates a problem for mobile users?

A. Mechanisms based on IP addresses B.
Mechanism with reusable passwords
C. one-time password mechanism.
D. challenge response mechanism.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Anything based on a fixed IP address would be a problem for mobile users because their location and its associated IP address can change from one time to the next. Many providers will assign a new IP every time the device would be restarted. For example an insurance adjuster using a laptop to file claims online. He goes to a different client each time and the address changes every time he connects to the ISP.

NOTE FROM CLEMENT:
The term MOBILE in this case is synonymous with Road Warriors where a user is contantly traveling and changing location. With smartphone today that may not be an issue but it would be an issue for laptops or WIFI tablets. Within a carrier network the IP will tend to be the same and would change rarely. So this question is more applicable to devices that are not cellular devices but in some cases this issue could affect cellular devices as well.

The following answers are incorrect:

mechanism with reusable password. This is incorrect because reusable password mechanism would not present a problem for mobile users. They are the least secure and change only at specific interval.

one-time password mechanism. This is incorrect because a one-time password mechanism would not present a problem for mobile users. Many are based on a clock and not on the IP address of the user.

challenge response mechanism. This is incorrect because challenge response mechanism would not present a problem for mobile users.

QUESTION 14
Organizations should consider which of the following first before allowing external access to their LANs via the Internet?

A. plan for implementing workstation locking mechanisms.
B. plan for protecting the modem pool.
C. plan for providing the user with his account usage information.
D. plan for considering proper authentication options.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Before a LAN is connected to the Internet, you need to determine what the access controls mechanisms are to be used, this would include how you are going to authenticate individuals that may access your network externally through access control.

The following answers are incorrect:

plan for implementing workstation locking mechanisms. This is incorrect because locking the workstations have no impact on the LAN or Internet access. plan for protecting the modem pool. This is incorrect because protecting the modem pool has no impact on the LAN or Internet access, it just protects the modem.

plan for providing the user with his account usage information. This is incorrect because the question asks what should be done first. While important your primary concern should be focused on security.

QUESTION 15
Which of the following would assist the most in Host Based intrusion detection?

A. audit trails.

B. access control lists.
C. security clearances.
D. host-based authentication.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
To assist in Intrusion Detection you would review audit logs for access violations.

The following answers are incorrect:

access control lists. This is incorrect because access control lists determine who has access to what but do not detect intrusions. security clearances. This is incorrect because security clearances determine who has access to what but do not detect intrusions. host-based authentication. This is incorrect because host-based authentication determine who have been authenticated to the system but do not dectect intrusions.

QUESTION 16
Controls to keep password sniffing attacks from compromising computer systems include which of the following?

A. static and recurring passwords.
B. encryption and recurring passwords.

C. one-time passwords and encryption.
D. static and one-time passwords.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
To minimize the chance of passwords being captured one-time passwords would prevent a password sniffing attack because once used it is no longer valid. Encryption will also minimize these types of attacks.

The following answers are correct:

static and recurring passwords. This is incorrect because if there is no encryption then someone password sniffing would be able to capture the password much easier if it never changed.

encryption and recurring passwords. This is incorrect because while encryption helps, recurring passwords do nothing to minimize the risk of passwords being captured.

static and one-time passwords. This is incorrect because while one-time passwords will prevent these types of attacks, static passwords do nothing to minimize the risk of passwords being captured.

QUESTION 17
Kerberos can prevent which one of the following attacks?

A. tunneling attack.
B. playback (replay) attack.
C. destructive attack.
D. process attack.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Each ticket in Kerberos has a timestamp and are subject to time expiration to help prevent these types of attacks.

The following answers are incorrect:

tunneling attack. This is incorrect because a tunneling attack is an attempt to bypass security and access low-level systems. Kerberos cannot totally prevent these types of attacks. destructive attack. This is incorrect because depending on the type of destructive attack, Kerberos cannot prevent someone from physically destroying a server. process attack. This is incorrect because with Kerberos cannot prevent an authorzied individuals from running processes.

QUESTION 18
In discretionary access environments, which of the following entities is authorized to grant information access to other people?

A. Manager
B. Group Leader
C. Security Manager
D. Data Owner

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
In Discretionary Access Control (DAC) environments, the user who creates a file is also considered the owner and has full control over the file including the ability to set permissions for that file. The following answers are incorrect:

manager. Is incorrect because in Discretionary Access Control (DAC) environments it is the owner/user that is authorized to grant information access to other people.

group leader. Is incorrect because in Discretionary Access Control (DAC) environments it is the owner/user that is authorized to grant information access to other people.

security manager. Is incorrect because in Discretionary Access Control (DAC) environments it is the owner/user that is authorized to grant information access to other people.

IMPORTANT NOTE:
The term Data Owner is also used within Classifications as well. Under the subject of classification the Data Owner is a person from management who has been entrusted with a data set that belongs to the company. For example it could be the Chief Financial Officer (CFO) who is entrusted with all of the financial data for a company. As such the CFO would determine the classification of the financial data and who can access as well. The Data Owner would then tell the Data Custodian (a technical person) what the classification and need to know is on the specific set of data.

The term Data Owner under DAC simply means whoever created the file and as the creator of the file the owner has full access and can grant access to other subjects based on their identity.

QUESTION 19
What is the main concern with single sign-on?

A. Maximum unauthorized access would be possible if a password is disclosed.
B. The security administrator's workload would increase. C. The users' password would be too hard to remember.
D. User access rights would be increased.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
A major concern with Single Sign-On (SSO) is that if a user's ID and password are compromised, the intruder would have access to all the systems that the user was authorized for.

The following answers are incorrect:

The security administrator's workload would increase. Is incorrect because the security administrator's workload would decrease and not increase. The admin would not be responsible for maintaining multiple user accounts just the one.

The users' password would be too hard to remember. Is incorrect because the users would have less passwords to remember.

User access rights would be increased. Is incorrect because the user access rights would not be any different than if they had to log into systems manually.

QUESTION 20
Who developed one of the first mathematical models of a multilevel-security computer system?

A. Diffie and Hellman.
B. Clark and Wilson.
C. Bell and LaPadula.
D. Gasser and Lipner.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
In 1973 Bell and LaPadula created the first mathematical model of a multi-level security system.

The following answers are incorrect:

Diffie and Hellman. This is incorrect because Diffie and Hellman was involved with cryptography.
Clark and Wilson. This is incorrect because Bell and LaPadula was the first model. The Clark-Wilson model came later, 1987.
Gasser and Lipner. This is incorrect, it is a distractor. Bell and LaPadula was the first model.

QUESTION 21
A department manager has read access to the salaries of the employees in his/her department but not to the salaries of employees in other departments. A database security mechanism that enforces this policy would typically be said to provide which of the following?

A. Content-dependent access control
B. Context-dependent access control
C. Least privileges access control
D. Ownership-based access control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
When access control is based on the content of an object, it is considered to be content dependent access control.

Content-dependent access control is based on the content itself.

The following answers are incorrect:

context-dependent access control. Is incorrect because this type of control is based on what the context is, facts about the data rather than what the object contains.
least privileges access control. Is incorrect because this is based on the least amount of rights needed to perform their jobs and not based on what is contained in the database.
ownership-based access control. Is incorrect because this is based on the owner of the data and and not based on what is contained in the database.

References:

OIG CBK Access Control (page 191)

QUESTION 22
Which of the following attacks could capture network user passwords?

A. Data diddling
B. Sniffing
C. IP Spoofing
D. Smurfing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
A network sniffer captures a copy every packet that traverses the network segment the sniffer is connect to.
Sniffers are typically devices that can collect information from a communication medium, such as a network. These devices can range from specialized equipment to basic workstations with customized software.

A sniffer can collect information about most, if not all, attributes of the communication. The most common method of sniffing is to plug a sniffer into an existing network device like a hub or switch. A hub (which is designed to relay all traffic passing through it to all of its ports) will automatically begin sending all the traffic on that network segment to the sniffing device. On the other hand, a switch (which is designed to limit what traffic gets sent to which port) will have to be specially configured to send all traffic to the port where the sniffer is plugged in.

Another method for sniffing is to use a network tap—a device that literally splits a network transmission into two identical streams; one going to the original network destination and the other going to the sniffing device. Each of these methods has its advantages and disadvantages, including cost, feasibility, and the desire to maintain the secrecy of the sniffing activity.

The packets captured by sniffer are decoded and then displayed by the sniffer. Therfore, if the username/password are contained in a packet or packets traversing the segment the sniffer is connected to, it will capture and display that information (and any other information on that segment it can see).

Of course, if the information is encrypted via a VPN, SSL, TLS, or similar technology, the information is still captured and displayed, but it is in an unreadable format.

The following answers are incorrect:

Data diddling involves changing data before, as it is enterred into a computer, or after it is extracted.

Spoofing is forging an address and inserting it into a packet to disguise the origin of the communication - or causing a system to respond to the wrong address.

Smurfing would refer to the smurf attack, where an attacker sends spoofed packets to the broadcast address on a gateway in order to cause a denial of service.

The following reference(s) were/was used to create this question:

CISA Review manual 2014 Page number 321
Official ISC2 Guide to the CISSP 3rd edition Page Number 153

QUESTION 23
Which of the following would constitute the best example of a password to use for access to a system by a network administrator?

A. holiday
B. Christmas12
C. Jenny
D. GyN19Za!

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
GyN19Za! would be the the best answer because it contains a mixture of upper and lower case characters, alphabetic and numeric characters, and a special character making it less vulnerable to password attacks.

All of the other answers are incorrect because they are vulnerable to brute force or dictionary attacks. Passwords should not be common words or names. The addition of a number to the end of a common word only marginally strengthens it because a common password attack would also check combinations of words:

Christmas23
Christmas123
etc...

QUESTION 24
The number of violations that will be accepted or forgiven before a violation record is produced is called which of the following?

A. clipping level
B. acceptance level
C. forgiveness level
D. logging level

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The correct answer is "clipping level". This is the point at which a system decides to take some sort of action when an action repeats a preset number of times. That action may be to log the activity, lock a user account, temporarily close a port, etc.

Example: The most classic example of a clipping level is failed login attempts. If you have a system configured to lock a user's account after three failed login attemts, that is the "clipping level".

The other answers are not correct because:

Acceptance level, forgiveness level, and logging level are nonsensical terms that do not exist (to my knowledge) within network security.

Reference:

Official ISC2 Guide - The term "clipping level" is not in the glossary or index of that book. I cannot find it in the text either. However, I'm quite certain that it would be considered part of the CBK, despite its exclusion from the Official Guide.

All in One Third Edition page: 136 - 137

QUESTION 25
Examples of types of physical access controls include all EXCEPT which of the following?

A. badges

B. locks C. guards
D. passwords

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Passwords are considered a Preventive/Technical (logical) control.

The following answers are incorrect:

badges Badges are a physical control used to identify an individual. A badge can include a smart device which can be used for authentication and thus a Technical control, but the actual badge itself is primarily a physical control.

locks Locks are a Preventative Physical control and has no Technical association.
guards Guards are a Preventative Physical control and has no Technical association.

The following reference(s) were/was used to create this question:

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 35).

QUESTION 26
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D. logging level

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Section: Access Control
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QUESTION 27
Examples of types of physical access controls include all EXCEPT which of the following?

A. badges
B. locks
C. guards

D. passwords

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Section: Access Control
Explanation

Explanation/Reference:
Passwords are considered a Preventive/Technical (logical) control.

The following answers are incorrect:

badges Badges are a physical control used to identify an individual. A badge can include a smart device which can be used for authentication and thus a Technical control, but the actual badge itself is primarily a physical control.

locks Locks are a Preventative Physical control and has no Technical association.
guards Guards are a Preventative Physical control and has no Technical association.

The following reference(s) were/was used to create this question:

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 35).

QUESTION 28
Guards are appropriate whenever the function required by the security program involves which of the following?

A. The use of discriminating judgment
B. The use of physical force
C. The operation of access control devices
D. The need to detect unauthorized access

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The Answer: The use of discriminating judgment, a guard can make the determinations that hardware or other automated security devices cannot make due to its ability to adjust to rapidly changing conditions, to learn and alter recognizable patterns, and to respond to various conditions in the environment. Guards are better at making value decisions at times of incidents. They are appropriate whenever immediate, discriminating judgment is required by the security entity.

The following answers are incorrect:

The use of physical force This is not the best answer. A guard provides discriminating judgment, and the ability to discern the need for physical force.
The operation of access control devices A guard is often uninvolved in the operations of an automated access control device such as a biometric reader, a smart lock, mantrap, etc.
The need to detect unauthorized access The primary function of a guard is not to detect unauthorized access, but to prevent unauthorized physical access attempts and may deter social engineering attempts.

The following reference(s) were/was used to create this question:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 10: Physical security (page 339).

Source: ISC2 Offical Guide to the CBK page 288-289.

QUESTION 29
What physical characteristic does a retinal scan biometric device measure?

A. The amount of light reaching the retina
B. The amount of light reflected by the retina
C. The pattern of light receptors at the back of the eye
D. The pattern of blood vessels at the back of the eye

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The retina, a thin nerve (1/50th of an inch) on the back of the eye, is the part of the eye which senses light and transmits impulses through the optic nerve to the brain - the equivalent of film in a camera. Blood vessels used for biometric identification are located along the neural retina, the outermost of retina's four cell layers.

The following answers are incorrect:

The amount of light reaching the retina The amount of light reaching the retina is not used in the biometric scan of the retina.
The amount of light reflected by the retina The amount of light reflected by the retina is not used in the biometric scan of the retina.

The pattern of light receptors at the back of the eye This is a distractor

The following reference(s) were/was used to create this question:

Reference: Retina Scan Technology.
ISC2 Official Guide to the CBK, 2007 (Page 161)

QUESTION 30
Which is the last line of defense in a physical security sense?

A. people
B. interior barriers
C. exterior barriers
D. perimeter barriers

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
"Ultimately, people are the last line of defense for your company's assets" (Pastore & Dulaney, 2006, p. 529).
Pastore, M. and Dulaney, E. (2006). CompTIA Security+ study guide: Exam SY0-101. Indianapolis, IN: Sybex.

QUESTION 31
The Computer Security Policy Model the Orange Book is based on is which of the following?

A. Bell-LaPadula
B. Data Encryption Standard
C. Kerberos
D. Tempest

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The Computer Security Policy Model Orange Book is based is the Bell-LaPadula Model. Orange Book Glossary.
The Data Encryption Standard (DES) is a cryptographic algorithm. National Information Security Glossary.
TEMPEST is related to limiting the electromagnetic emanations from electronic equipment.
Reference: U.S. Department of Defense, Trusted Computer System Evaluation Criteria (Orange Book), DOD 5200.28-STD. December 1985 (also available here).

QUESTION 32
The end result of implementing the principle of least privilege means which of the following?

A. Users would get access to only the info for which they have a need to know
B. Users can access all systems.
C. Users get new privileges added when they change positions.
D. Authorization creep.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The principle of least privilege refers to allowing users to have only the access they need and not anything more. Thus, certain users may have no need to access any of the files on specific systems.

The following answers are incorrect:
Users can access all systems. Although the principle of least privilege limits what access and systems users have authorization to, not all users would have a need to know to access all of the systems. The best answer is still Users would get access to only the info for which they have a need to know as some of the users may not have a need to access a system.

Users get new privileges when they change positions. Although true that a user may indeed require new privileges, this is not a given fact and in actuality a user may require less privileges for a new position. The principle of least privilege would require that the rights required for the position be closely evaluated and where possible rights revoked.

Authorization creep. Authorization creep occurs when users are given additional rights with new positions and responsibilities. The principle of least privilege should actually prevent authorization creep.

The following reference(s) were/was used to create this question:

ISC2 OIG 2007 p.101,123
Shon Harris AIO v3 p148, 902-903

QUESTION 33
Which of the following is the most reliable authentication method for remote access?

A. Variable callback system
B. Synchronous token

C. Fixed callback system
D. Combination of callback and caller ID

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
A Synchronous token generates a one-time password that is only valid for a short period of time. Once the password is used it is no longer valid, and it expires if not entered in the acceptable time frame.

The following answers are incorrect:
Variable callback system. Although variable callback systems are more flexible than fixed callback systems, the system assumes the identity of the individual unless two-factor authentication is also implemented. By itself, this method might allow an attacker access as a trusted user.

Fixed callback system. Authentication provides assurance that someone or something is who or what he/it is supposed to be. Callback systems authenticate a person, but anyone can pretend to be that person. They are tied to a specific place and phone number, which can be spoofed by implementing call-forwarding.

Combination of callback and Caller ID. The caller ID and callback functionality provides greater confidence and auditability of the caller's identity. By disconnecting and calling back only authorized phone numbers, the system has a greater confidence in the location of the call. However, unless combined with strong authentication, any individual at the location could obtain access.

The following reference(s) were/was used to create this question:

Shon Harris AIO v3 p. 140, 548
ISC2 OIG 2007 p. 152-153, 126-127

QUESTION 34
Which of the following is the most reliable, secure means of removing data from magnetic storage media such as a magnetic tape, or a cassette?

A. Degaussing
B. Parity Bit Manipulation
C. Zeroization
D. Buffer overflow

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
A "Degausser (Otherwise known as a Bulk Eraser) has the main function of reducing to near zero the magnetic flux stored in the magnetized medium. Flux density is measured in Gauss or Tesla. The operation is speedier than overwriting and done in one short operation. This is achieved by subjecting the subject in bulk to a series of fields of alternating polarity and gradually decreasing strength.

The following answers are incorrect:Parity Bit Manipulation. Parity has to do with disk lerror detection, not data removal. A bit or series of bits appended to a character or block of characters to ensure that the information received is the same as the infromation that was sent.

Zeroization. Zeroization involves overwrting data to sanitize it. It is time-consuming and not foolproof. The potential of restoration of data does exist with this method.
Buffer overflow. This is a detractor. Although many Operating Systems use a disk buffer to temporarily hold data read from disk, its primary purpose has no connection to data removal. An overflow goes outside the constraints defined for the buffer and is a method used by an attacker to attempt access to a system.

The following reference(s) were/was used to create this question:

Shon Harris AIO v3. pg 908
Reference: What is degaussing.

QUESTION 35
The Orange Book is founded upon which security policy model?

A. The Biba Model
B. The Bell LaPadula Model
C. Clark-Wilson Model
D. TEMPEST

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
From the glossary of Computer Security Basics:
The Bell-LaPadula model is the security policy model on which the Orange Book requirements are based. From the Orange Book definition, "A formal state transition model of computer security policy that describes a set of access control rules. In this formal model, the entities in a computer system are divided into abstract sets of subjects and objects. The notion of secure state is defined and it is proven that each state transition preserves security by moving from secure state to secure state; thus, inductively proving the system is secure. A system state is defined to be 'secure' if the only permitted access modes of subjects to objects are in accordance with a specific security policy. In order to determine whether or not a specific access mode is allowed, the clearance of a subject is compared to the classification of the object and a determination is made as to whether the subject is authorized for the specific access mode."

The Biba Model is an integrity model of computer security policy that describes a set of rules. In this model, a subject may not depend on any object or other subject that is less trusted than itself.
The Clark Wilson Model is an integrity model for computer security policy designed for a commercial environment. It addresses such concepts as nondiscretionary access control, privilege separation, and least privilege. TEMPEST is a government program that prevents the compromising electrical and electromagnetic signals that emanate from computers and related equipment from being intercepted and deciphered.
Source: RUSSEL, Deborah & GANGEMI, G.T. Sr., Computer Security Basics, O'Reilly, 1991.
Also: U.S. Department of Defense, Trusted Computer System Evaluation Criteria (Orange Book), DOD 5200.28-STD. December 1985 (also available here).

QUESTION 36
Which of the following is true of two-factor authentication?

A. It uses the RSA public-key signature based on integers with large prime factors.
B. It requires two measurements of hand geometry.
C. It does not use single sign-on technology.
D. It relies on two independent proofs of identity.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The Answer: It relies on two independent proofs of identity. Two-factor authentication refers to using two independent proofs of identity, such as something the user has (e.g. a token card) and something the user knows (a password). Two-factor authentication may be used with single sign-on.

The following answers are incorrect: It requires two measurements of hand geometry. Measuring hand geometry twice does not yield two independent proofs.

It uses the RSA public-key signature based on integers with large prime factors. RSA encryption uses integers with exactly two prime factors, but the term "twofactor authentication" is not used in that context.

It does not use single sign-on technology. This is a detractor.

The following reference(s) were/was used to create this question:
Shon Harris AIO v.3 p.129
ISC2 OIG, 2007 p. 126

QUESTION 37
The primary service provided by Kerberos is which of the following?

A. non-repudiation
B. confidentiality
C. authentication
D. authorization

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The Answer: authentication. Kerberos is an authentication service. It can use single-factor or multi-factor authentication methods.

The following answers are incorrect:

non-repudiation. Since Kerberos deals primarily with symmetric cryptography, it does not help with non-repudiation.
confidentiality. Once the client is authenticated by Kerberos and obtains its session key and ticket, it may use them to assure confidentiality of its communication with a server; however, that is not a Kerberos service as such.
authorization. Although Kerberos tickets may include some authorization information, the meaning of the authorization fields is not standardized in the Kerberos specifications, and authorization is not a primary Kerberos service.

The following reference(s) were/was used to create this question:

ISC2 OIG,2007 p. 179-184
Shon Harris AIO v.3 152-155

QUESTION 38
There are parallels between the trust models in Kerberos and Public Key Infrastructure (PKI). When we compare them side by side, Kerberos tickets correspond most closely to which of the following?

A. public keys

B. private keys
C. public-key certificates
D. private-key certificates

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
A Kerberos ticket is issued by a trusted third party. It is an encrypted data structure that includes the service encryption key. In that sense it is similar to a publickey certificate. However, the ticket is not the key.

The following answers are incorrect:

public keys. Kerberos tickets are not shared out publicly, so they are not like a PKI public key.
private keys. Although a Kerberos ticket is not shared publicly, it is not a private key. Private keys are associated with Asymmetric crypto system which is not used by Kerberos. Kerberos uses only the Symmetric crypto system. private key certificates. This is a detractor. There is no such thing as a private key certificate.

QUESTION 39
Which of the following is NOT a system-sensing wireless proximity card?

A. magnetically striped card
B. passive device
C. field-powered device
D. transponder

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, page 342.

QUESTION 40
Which of the following is NOT a type of motion detector?

A. Photoelectric sensor

B. Passive infrared sensors

C. Microwave Sensor.
D. Ultrasonic Sensor.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
A photoelectric sensor does not "directly" sense motion there is a narrow beam that won't set off the sensor unless the beam is broken. Photoelectric sensors, along with dry contact switches, are a type of perimeter intrusion detector.

All of the other answers are valid types of motion detectors types.
The content below on the different types of sensors is from Wikepedia:
Indoor Sensors

These types of sensors are designed for indoor use. Outdoor use would not be advised due to false alarm vulnerability and weather durability.Passive infrared detectors

Passive Infrared Sensor
The passive infrared detector (PIR) is one of the most common detectors found in household and small business environments because it offers affordable and reliable functionality. The term passive means the detector is able to function without the need to generate and radiate its own energy (unlike ultrasonic and microwave volumetric intrusion detectors that are “active” in operation). PIRs are able to distinguish if an infrared emitting object is present by first learning the ambient temperature of the monitored space and then detecting a change in the temperature caused by the presence of an object. Using the principle of differentiation, which is a check of presence or nonpresence, PIRs verify if an intruder or object is actually there. Creating individual zones of detection where each

zone comprises one or more layers can achieve differentiation. Between the zones there are areas of no sensitivity (dead zones) that are used by the sensor for comparison.

Ultrasonic detectors

Using frequencies between 15 kHz and 75 kHz, these active detectors transmit ultrasonic sound waves that are inaudible to humans. The Doppler shift principle is the underlying method of operation, in which a change in frequency is detected due to object motion. This is caused when a moving object changes the frequency of sound waves around it. Two conditions must occur to successfully detect a Doppler shift event:

There must be motion of an object either towards or away from the receiver.
The motion of the object must cause a change in the ultrasonic frequency to the receiver relative to the transmitting frequency.

The ultrasonic detector operates by the transmitter emitting an ultrasonic signal into the area to be protected. The sound waves are reflected by solid objects (such as the surrounding floor, walls and ceiling) and then detected by the receiver. Because ultrasonic waves are transmitted through air, then hard-surfaced objects tend to reflect most of the ultrasonic energy, while soft surfaces tend to absorb most energy.

When the surfaces are stationary, the frequency of the waves detected by the receiver will be equal to the transmitted frequency. However, a change in frequency will occur as a result of the Doppler principle, when a person or object is moving towards or away from the detector. Such an event initiates an alarm signal. This technology is considered obsolete by many alarm professionals, and is not actively installed.

Microwave detectors

This device emits microwaves from a transmitter and detects any reflected microwaves or reduction in beam intensity using a receiver. The transmitter and receiver are usually combined inside a single housing (monostatic) for indoor applications, and separate housings (bistatic) for outdoor applications. To reduce false alarms this type of detector is usually combined with a passive infrared detector or "Dualtec" alarm.

Microwave detectors respond to a Doppler shift in the frequency of the reflected energy, by a phase shift, or by a sudden reduction of the level of received energy. Any of these effects may indicate motion of an intruder.

Photo-electric beams

Photoelectric beam systems detect the presence of an intruder by transmitting visible or infrared light beams across an area, where these beams may be obstructed. To improve the detection surface area, the beams are often employed in stacks of two or more. However, if an intruder is aware of the technology's presence, it can be avoided. The technology can be an effective long-range detection system, if installed in stacks of three or more where the transmitters and receivers are staggered to create a fence-like barrier. Systems are available for both internal and external applications. To prevent a clandestine attack using a secondary light source being used to hold the detector in a 'sealed' condition whilst an intruder passes through, most systems use and detect a modulated light source.

Glass break detectors

The glass break detector may be used for internal perimeter building protection. When glass breaks it generates sound in a wide band of frequencies. These can range from infrasonic, which is below 20 hertz (Hz) and can not be heard by the human ear, through the audio band from 20 Hz to 20 kHz which humans can hear, right up to ultrasonic, which is above 20 kHz and again cannot be heard. Glass break acoustic detectors are mounted in close proximity to the glass panes and listen for sound frequencies associated with glass breaking. Seismic glass break detectors are different in that they are installed on the glass pane. When glass

breaks it produces specific shock frequencies which travel through the glass and often through the window frame and the surrounding walls and ceiling. Typically, the most intense frequencies generated are between 3 and 5 kHz, depending on the type of glass and the presence of a plastic interlayer. Seismic glass break detectors “feel” these shock frequencies and in turn generate an alarm condition.

The more primitive detection method involves gluing a thin strip of conducting foil on the inside of the glass and putting low-power electrical current through it. Breaking the glass is practically guaranteed to tear the foil and break the circuit.
Smoke, heat, and carbon monoxide detectors

Heat Detection System
Most systems may also be equipped with smoke, heat, and/or carbon monoxide detectors. These are also known as 24 hour zones (which are on at all times). Smoke detectors and heat detectors protect from the risk of fire and carbon monoxide detectors protect from the risk of carbon monoxide. Although an intruder alarm panel may also have these detectors connected, it may not meet all the local fire code requirements of a fire alarm system.

Other types of volumetric sensors could be:

Active Infrared
Passive Infrared/Microware combined
Radar
Accoustical Sensor/Audio
Vibration Sensor (seismic)
Air Turbulence

QUESTION 41
Which of the following is NOT a technique used to perform a penetration test?

A. traffic padding
B. scanning and probing

C. war dialing
D. sniffing

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Traffic padding is a countermeasure to traffic analysis.

Even if perfect cryptographic routines are used, the attacker can gain knowledge of the amount of traffic that was generated. The attacker might not know what Alice and Bob were talking about, but can know that they were talking and how much they talked. In certain circumstances this can be very bad. Consider for example when a military is organising a secret attack against another nation: it may suffice to alert the other nation for them to know merely that there is a lot of secret activity going on.

As another example, when encrypting Voice Over IP streams that use variable bit rate encoding, the number of bits per unit of time is not obscured, and this can be exploited to guess spoken phrases.

Padding messages is a way to make it harder to do traffic analysis. Normally, a number of random bits are appended to the end of the message with an indication at the end how much this random data is. The randomness should have a minimum value of 0, a maximum number of N and an even distribution between the two extremes. Note, that increasing 0 does not help, only increasing N helps, though that also means that a lower percentage of the channel will be used to transmit real data. Also note, that since the cryptographic routine is assumed to be uncrackable (otherwise the padding length itself is crackable), it does not help to put the padding anywhere else, e.g. at the beginning, in the middle, or in a sporadic manner.

The other answers are all techniques used to do Penetration Testing.

References:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, pages 233, 238.

and
https://secure.wikimedia.org/wikipedia/en/wiki/Padding_%28cryptography%29#Traffic_analysis

QUESTION 42
In which of the following model are Subjects and Objects identified and the permissions applied to each subject/object combination are specified. Such a model can be used to quickly summarize what permissions a subject has for various system objects.

A. Access Control Matrix model
B. Take-Grant model

C. Bell-LaPadula model
D. Biba model

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
An access control matrix is a table of subjects and objects indicating what actions individual subjects can take upon individual objects. Matrices are data structures that programmers implement as table lookups that will be used and enforced by the operating system.

This type of access control is usually an attribute of DAC models. The access rights can be assigned directly to the subjects (capabilities) or to the objects (ACLs).

Capability Table
A capability table specifies the access rights a certain subject possesses pertaining to specific objects. A capability table is different from an ACL because the subject is bound to the capability table, whereas the object is bound to the ACL.

Access control lists (ACLs)
ACLs are used in several operating systems, applications, and router configurations. They are lists of subjects that are authorized to access a specific object, and they define what level of authorization is granted. Authorization can be specific to an individual, group, or role. ACLs map values from the access control matrix to the object.

Whereas a capability corresponds to a row in the access control matrix, the ACL corresponds to a column of the matrix.
NOTE: Ensure you are familiar with the terms Capability and ACLs for the purpose of the exam.

Resource(s) used for this question:

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 5264-5267). McGraw-Hill. Kindle Edition.
or
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition, Page 229
and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1923-1925). Auerbach Publications. Kindle Edition.

QUESTION 43
In which of the following security models is the subject's clearance compared to the object's classification such that specific rules can be applied to control how the subject-to-object interactions take place?

A. Bell-LaPadula model

B. Biba model
C. Access Matrix model
D. Take-Grant model

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The Bell-LAPadula model is also called a multilevel security system because users with different clearances use the system and the system processes data with different classifications. Developed by the US Military in the 1970s.

A security model maps the abstract goals of the policy to information system terms by specifying explicit data structures and techniques necessary to enforce the security policy. A security model is usually represented in mathematics and analytical ideas, which are mapped to system specifications and then developed by programmers through programming code. So we have a policy that encompasses security goals, such as "each subject must be authenticated and authorized before accessing an object." The security model takes this requirement and provides the necessary mathematical formulas, relationships, and logic structure to be followed to accomplish this goal.

A system that employs the Bell-LaPadula model is called a multilevel security system because users with different clearances use the system, and the system processes data at different classification levels. The level at which information is classified determines the handling procedures that should be used. The BellLaPadula model is a state machine model that enforces the confidentiality aspects of access control. A matrix and security levels are used to determine if subjects can access different objects. The subject's clearance is compared to the object's classification and then specific rules are applied to control how subject-to-object subject-to-object interactions can take place.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 369). McGraw-Hill. Kindle Edition.

QUESTION 44
Which of the following classes is the first level (lower) defined in the TCSEC (Orange Book) as mandatory protection?

A. B
B. A
C. C
D. D

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
B level is the first Mandatory Access Control Level.

First published in 1983 and updated in 1985, the TCSEC, frequently referred to as the Orange Book, was a United States Government Department of Defense (DoD) standard that sets basic standards for the implementation of security protections in computing systems. Primarily intended to help the DoD find products that met those basic standards, TCSEC was used to evaluate, classify, and select computer systems being considered for the processing, storage, and retrieval of sensitive or classified information on military and government systems. As such, it was strongly focused on enforcing confidentiality with no focus on other aspects of security such as integrity or availability. Although it has since been superseded by the common criteria, it influenced the development of other product evaluation criteria, and some of its basic approach and terminology continues to be used.

Reference used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17920-17926). Auerbach Publications. Kindle Edition. and
THE source for all TCSEC "level" questions: http://csrc.nist.gov/publications/secpubs/rainbow/std001.txt (paragraph 3 for this one)

QUESTION 45
Which of the following classes is defined in the TCSEC (Orange Book) as discretionary protection?

A. C
B. B
C. A
D. D

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, page 197.
Also: THE source for all TCSEC "level" questions: http://csrc.nist.gov/publications/secpubs/rainbow/std001.txt

QUESTION 46
Which of the following division is defined in the TCSEC (Orange Book) as minimal protection?

A. Division D
B. Division C
C. Division B

D. Division A

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The criteria are divided into four divisions: D, C, B, and A ordered in a hierarchical manner with the highest division (A) being reserved for systems providing the most comprehensive security.

Each division represents a major improvement in the overall confidence one can place in the system for the protection of sensitive information.

Within divisions C and B there are a number of subdivisions known as classes. The classes are also ordered in a hierarchical manner with systems representative of division C and lower classes of division B being characterized by the set of computer security mechanisms that they possess.

Assurance of correct and complete design and implementation for these systems is gained mostly through testing of the security- relevant portions of the system. The security-relevant portions of a system are referred to throughout this document as the Trusted Computing Base (TCB).

Systems representative of higher classes in division B and division A derive their security attributes more from their design and implementation structure. Increased assurance that the required features are operative, correct, and tamperproof under all circumstances is gained through progressively more rigorous analysis during the design process.

TCSEC provides a classification system that is divided into hierarchical divisions of assurance levels:

Division D - minimal security
Division C - discretionary protection
Division B - mandatory protection
Division A - verified protection

Reference: page 358 AIO V.5 Shon Harris

also
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, page 197.
Also:
THE source for all TCSEC "level" questions: http://csrc.nist.gov/publications/secpubs/rainbow/std001.txt

QUESTION 47
Which of the following was developed by the National Computer Security Center (NCSC) for the US Department of Defense ?

A. TCSEC

B. ITSEC
C. DIACAP
D. NIACAP

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The Answer: TCSEC; The TCSEC, frequently referred to as the Orange Book, is the centerpiece of the DoD Rainbow Series publications.

Initially issued by the National Computer Security Center (NCSC) an arm of the National Security Agency in 1983 and then updated in 1985, TCSEC was replaced with the development of the Common Criteria international standard originally published in 2005.

References:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, pages 197-199.

Wikepedia

http://en.wikipedia.org/wiki/TCSEC

QUESTION 48
Which of the following was developed to address some of the weaknesses in Kerberos and uses public key cryptography for the distribution of secret keys and provides additional access control support?

A. SESAME
B. RADIUS
C. KryptoKnight
D. TACACS+

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Secure European System for Applications in a Multi-vendor Environment (SESAME) was developed to address some of the weaknesses in Kerberos and uses public key cryptography for the distribution of secret keys and provides additional access control support. Reference:

TIPTON, Harold, Official (ISC)2 Guide to the CISSP CBK (2007), page 184.

QUESTION 49
Single Sign-on (SSO) is characterized by which of the following advantages?

A. Convenience
B. Convenience and centralized administration
C. Convenience and centralized data administration
D. Convenience and centralized network administration

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Convenience -Using single sign-on users have to type their passwords only once when they first log in to access all the network resources; and Centralized Administration as some single sign-on systems are built around a unified server administration system. This allows a single administrator to add and delete accounts across the entire network from one user interface.

The following answers are incorrect:

Convenience - alone this is not the correct answer.

Centralized Data or Network Administration - these are thrown in to mislead the student. Neither are a benefit to SSO, as these specifically should not be allowed with just an SSO.

References: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, page 35.
TIPTON, Harold F. & HENRY, Kevin, Official (ISC)2 Guide to the CISSP CBK, 2007, page 180.

QUESTION 50
The "vulnerability of a facility" to damage or attack may be assessed by all of the following except:

A. Inspection
B. History of losses
C. Security controls
D. security budget

Correct Answer: D

Section: Access Control
Explanation

Explanation/Reference:
Source: The CISSP Examination Textbook- Volume 2: Practice by S. Rao Vallabhaneni.

QUESTION 51
What is the primary role of smartcards in a PKI?

A. Transparent renewal of user keys
B. Easy distribution of the certificates between the users
C. Fast hardware encryption of the raw data
D. Tamper resistant, mobile storage and application of private keys of the users

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Reference: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 2001, McGraw-Hill/Osborne, page 139;

SNYDER, J., What is a SMART CARD?.

Wikipedia has a nice definition at: http://en.wikipedia.org/wiki/Tamper_resistance
Security

Tamper-resistant microprocessors are used to store and process private or sensitive information, such as private keys or electronic money credit. To prevent an attacker from retrieving or modifying the information, the chips are designed so that the information is not accessible through external means and can be accessed only by the embedded software, which should contain the appropriate security measures.

Examples of tamper-resistant chips include all secure cryptoprocessors, such as the IBM 4758 and chips used in smartcards, as well as the Clipper chip.
It has been argued that it is very difficult to make simple electronic devices secure against tampering, because numerous attacks are possible, including:

physical attack of various forms (microprobing, drills, files, solvents, etc.)
freezing the device
applying out-of-spec voltages or power surges applying unusual clock signals inducing software errors using radiation measuring the precise time and power requirements of certain operations (see power analysis)

Tamper-resistant chips may be designed to zeroise their sensitive data (especially cryptographic keys) if they detect penetration of their security encapsulation or out-of-specification environmental parameters. A chip may even be rated for "cold zeroisation", the ability to zeroise itself even after its power supply has been crippled.

Nevertheless, the fact that an attacker may have the device in his possession for as long as he likes, and perhaps obtain numerous other samples for testing and practice, means that it is practically impossible to totally eliminate tampering by a sufficiently motivated opponent. Because of this, one of the most important elements in protecting a system is overall system design. In particular, tamper-resistant systems should "fail gracefully" by ensuring that compromise of one device does not compromise the entire system. In this manner, the attacker can be practically restricted to attacks that cost less than the expected return from compromising a single device (plus, perhaps, a little more for kudos). Since the most sophisticated attacks have been estimated to cost several hundred thousand dollars to carry out, carefully designed systems may be invulnerable in practice.

QUESTION 52
What kind of certificate is used to validate a user identity?

A. Public key certificate
B. Attribute certificate
C. Root certificate
D. Code signing certificate

Correct Answer: A
Section: Access Control
Explanation
Explanation/Reference:
In cryptography, a public key certificate (or identity certificate) is an electronic document which incorporates a digital signature to bind together a public key with an identity — information such as the name of a person or an organization, their address, and so forth. The certificate can be used to verify that a public key belongs to an individual.

In a typical public key infrastructure (PKI) scheme, the signature will be of a certificate authority (CA). In a web of trust scheme, the signature is of either the user (a self-signed certificate) or other users ("endorsements"). In either case, the signatures on a certificate are attestations by the certificate signer that the identity information and the public key belong together.

In computer security, an authorization certificate (also known as an attribute certificate) is a digital document that describes a written permission from the issuer to use a service or a resource that the issuer controls or has access to use. The permission can be delegated.

Some people constantly confuse PKCs and ACs. An analogy may make the distinction clear. A PKC can be considered to be like a passport: it identifies the holder, tends to last for a long time, and should not be trivial to obtain. An AC is more like an entry visa: it is typically issued by a different authority and does not last for as long a time. As acquiring an entry visa typically requires presenting a passport, getting a visa can be a simpler process.

A real life example of this can be found in the mobile software deployments by large service providers and are typically applied to platforms such as Microsoft Smartphone (and related), Symbian OS, J2ME, and others.

In each of these systems a mobile communications service provider may customize the mobile terminal client distribution (ie. the mobile phone operating system or application environment) to include one or more root certificates each associated with a set of capabilities or permissions such as "update firmware", "access address book", "use radio interface", and the most basic one, "install and execute". When a developer wishes to enable distribution and execution in one of these controlled environments they must acquire a certificate from an appropriate CA, typically a large commercial CA, and in the process they usually have their identity verified using out-of-band mechanisms such as a combination of phone call, validation of their legal entity through government and commercial databases, etc., similar to the high assurance SSL certificate vetting process, though often there are additional specific requirements imposed on would-be developers/publishers.

Once the identity has been validated they are issued an identity certificate they can use to sign their software; generally the software signed by the developer or publisher's identity certificate is not distributed but rather it is submitted to processor to possibly test or profile the content before generating an authorization certificate which is unique to the particular software release. That certificate is then used with an ephemeral asymmetric key-pair to sign the software as the last step of preparation for distribution. There are many advantages to separating the identity and authorization certificates especially relating to risk mitigation of new content being accepted into the system and key management as well as recovery from errant software which can be used as attack vectors.

References:

HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 2001, McGraw-Hill/Osborne, page 540.
http://en.wikipedia.org/wiki/Attribute_certificate
http://en.wikipedia.org/wiki/Public_key_certificate

QUESTION 53
Which of the following is not a physical control for physical security?

A. lighting
B. fences
C. training
D. facility construction materials

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Some physical controls include fences, lights, locks, and facility construction materials. Some administrative controls include facility selection and construction, facility management, personnel controls, training, and emergency response and procedures.

From: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 3rd. Ed., Chapter 6, page 403.

QUESTION 54
Crime Prevention Through Environmental Design (CPTED) is a discipline that:

A. Outlines how the proper design of a physical environment can reduce crime by directly affecting human behavior.
B. Outlines how the proper design of the logical environment can reduce crime by directly affecting human behavior.
C. Outlines how the proper design of the detective control environment can reduce crime by directly affecting human behavior.
D. Outlines how the proper design of the administrative control environment can reduce crime by directly affecting human behavior.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Crime Prevention Through Environmental Design (CPTED) is a discipline that outlines how the proper design of a physical environment can reduce crime by directly affecting human behavior. It provides guidance about lost and crime prevention through proper facility contruction and environmental components and procedures.

CPTED concepts were developed in the 1960s. They have been expanded upon and have matured as our environments and crime types have evolved. CPTED has been used not just to develop corporate physical security programs, but also for large-scale activities such as development of neighborhoods, towns, and cities. It addresses landscaping, entrances, facility and neighborhood layouts, lighting, road placement, and traffic circulation patterns. It looks at microenvironments, such as offices and rest-rooms, and macroenvironments, like campuses and cities.

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 435). McGraw-Hill. Kindle Edition.
and

CPTED Guide Book

QUESTION 55
The following is NOT a security characteristic we need to consider while choosing a biometric identification systems:

A. data acquisition process
B. cost
C. enrollment process
D. speed and user interface

Correct Answer: B

Section: Access Control
Explanation

Explanation/Reference:
Cost is a factor when considering Biometrics but it is not a security characteristic.

All the other answers are incorrect because they are security characteristics related to Biometrics.

data acquisition process can cause a security concern because if the process is not fast and efficient it can discourage individuals from using the process.

enrollment process can cause a security concern because the enrollment process has to be quick and efficient. This process captures data for authentication.

speed and user interface can cause a security concern because this also impacts the users acceptance rate of biometrics. If they are not comfortable with the interface and speed they might sabotage the devices or otherwise attempt to circumvent them.

References:
OIG Access Control (Biometrics) (pgs 165-167)

From: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, Pages 5-6.
in process of correction

QUESTION 56
In biometric identification systems, at the beginning, it was soon apparent that truly positive identification could only be based on :

A. sex of a person
B. physical attributes of a person
C. age of a person
D. voice of a person

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Today implementation of fast, accurate reliable and user-acceptable biometric identification systems is already under way.
From: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, Page 7.

QUESTION 57
In biometric identification systems, at the beginning, it was soon apparent that truly positive identification could only be based on physical attributes of a person. This raised the necessity of answering 2 questions :

A. what was the sex of a person and his age
B. what part of body to be used and how to accomplish identification that is viable
C. what was the age of a person and his income level
D. what was the tone of the voice of a person and his habits

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Today implementation of fast, accurate reliable and user-acceptable biometric identification systems is already taking place. Unique physical attributes or behavior of a person are used for that purpose.

From: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, Page 7.

QUESTION 58
In biometric identification systems, the parts of the body conveniently available for identification are:

A. neck and mouth
B. hands, face, and eyes
C. feet and hair
D. voice and neck

Correct Answer: B
Section: Access Control
Explanation
Explanation/Reference:
Today implementation of fast, accurate, reliable, and user-acceptable biometric identification systems are already under way. Because most identity authentication takes place when a people are fully clothed (neck to feet and wrists), the parts of the body conveniently available for this purpose are hands, face, and eyes. From: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, Page 7.

QUESTION 59
Controlling access to information systems and associated networks is necessary for the preservation of their:

A. Authenticity, confidentiality and availability
B. Confidentiality, integrity, and availability.
C. integrity and availability.

D. authenticity,confidentiality, integrity and availability.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Controlling access to information systems and associated networks is necessary for the preservation of their confidentiality, integrity and availability.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 31.

QUESTION 60
Controls like guards and general steps to maintain building security, securing of server rooms or laptops, the protection of cables, and usage of magnetic switches on doors and windows are some of the examples of:

A. Administrative controls
B. Logical controls
C. Technical controls
D. Physical controls

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Controls like guards and general steps to maintain building security, securing of server rooms or laptops, the protection of cables, and usage of magnetic switches on doors and windows are all examples of Physical Security.

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 61
To control access by a subject (an active entity such as individual or process) to an object (a passive entity such as a file) involves setting up:

A. Access Rules
B. Access Matrix
C. Identification controls

D. Access terminal

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Controlling access by a subject (an active entity such as individual or process) to an object (a passive entity such as a file) involves setting up access rules.

These rules can be classified into three access control models: Mandatory, Discretionary, and Non-Discretionary.

An access matrix is one of the means used to implement access control.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 62
Rule-Based Access Control (RuBAC) access is determined by rules. Such rules would fit within what category of access control ?

A. Discretionary Access Control (DAC)
B. Mandatory Access control (MAC)
C. Non-Discretionary Access Control (NDAC)
D. Lattice-based Access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Rule-based access control is a type of non-discretionary access control because this access is determined by rules and the subject does not decide what those rules will be, the rules are uniformly applied to ALL of the users or subjects.

In general, all access control policies other than DAC are grouped in the category of non-discretionary access control (NDAC). As the name implies, policies in this category have rules that are not established at the discretion of the user. Non-discretionary policies establish controls that cannot be changed by users, but only through administrative action.

Both Role Based Access Control (RBAC) and Rule Based Access Control (RuBAC) fall within Non Discretionary Access Control (NDAC). If it is not DAC or MAC then it is most likely NDAC.

IT IS NOT ALWAYS BLACK OR WHITE

The different access control models are not totally exclusive of each others. MAC is making use of Rules to be implemented. However with MAC you have requirements above and beyond having simple access rules. The subject would get formal approval from management, the subject must have the proper security clearance, objects must have labels/sensitivity levels attached to them, subjects must have the proper security clearance. If all of this is in place then you have MAC.

BELOW YOU HAVE A DESCRIPTION OF THE DIFFERENT CATEGORIES:

MAC = Mandatory Access Control
Under a mandatory access control environment, the system or security administrator will define what permissions subjects have on objects. The administrator does not dictate user's access but simply configure the proper level of access as dictated by the Data Owner.

The MAC system will look at the Security Clearance of the subject and compare it with the object sensitivity level or classification level. This is what is called the dominance relationship.

The subject must DOMINATE the object sensitivity level. Which means that the subject must have a security clearance equal or higher than the object he is attempting to access.

MAC also introduce the concept of labels. Every objects will have a label attached to them indicating the classification of the object as well as categories that are used to impose the need to know (NTK) principle. Even thou a user has a security clearance of Secret it does not mean he would be able to access any Secret documents within the system. He would be allowed to access only Secret document for which he has a Need To Know, formal approval, and object where the user belong to one of the categories attached to the object.

If there is no clearance and no labels then IT IS NOT Mandatory Access Control.

Many of the other models can mimic MAC but none of them have labels and a dominance relationship so they are NOT in the MAC category.

NISTR-7316 Says:
Usually a labeling mechanism and a set of interfaces are used to determine access based on the MAC policy; for example, a user who is running a process at the Secret classification should not be allowed to read a file with a label of Top Secret. This is known as the "simple security rule," or "no read up." Conversely, a user who is running a process with a label of Secret should not be allowed to write to a file with a label of Confidential. This rule is called the "*-property" (pronounced "star property") or "no write down." The *-property is required to maintain system security in an automated environment. A variation on this rule called the "strict *property" requires that information can be written at, but not above, the subject's clearance level. Multilevel security models such as the Bell-La Padula Confidentiality and Biba Integrity models are used to formally specify this kind of MAC policy.

DAC = Discretionary Access Control

DAC is also known as: Identity Based access control system.
The owner of an object is define as the person who created the object. As such the owner has the discretion to grant access to other users on the network. Access will be granted based solely on the identity of those users.

Such system is good for low level of security. One of the major problem is the fact that a user who has access to someone's else file can further share the file with other users without the knowledge or permission of the owner of the file. Very quickly this could become the wild wild west as there is no control on the dissimination of the information.

RBAC = Role Based Access Control

RBAC is a form of Non-Discretionary access control.
Role Based access control usually maps directly with the different types of jobs performed by employees within a company.

For example there might be 5 security administrator within your company. Instead of creating each of their profile one by one, you would simply create a role and assign the administrators to the role. Once an administrator has been assigned to a role, he will IMPLICITLY inherit the permissions of that role.

RBAC is great tool for environment where there is a a large rotation of employees on a daily basis such as a very large help desk for example.

RBAC or RuBAC = Rule Based Access Control
RuBAC is a form of Non-Discretionary access control.

A good example of a Rule Based access control device would be a Firewall. A single set of rules is imposed to all users attempting to connect through the firewall.

NOTE FROM CLEMENT:
Lot of people tend to confuse MAC and Rule Based Access Control.

Mandatory Access Control must make use of LABELS. If there is only rules and no label, it cannot be Mandatory Access Control. This is why they call it Non Discretionary Access control (NDAC).

There are even books out there that are WRONG on this subject. Books are sometimes opiniated and not strictly based on facts.

In MAC subjects must have clearance to access sensitive objects. Objects have labels that contain the classification to indicate the sensitivity of the object and the label also has categories to enforce the need to know.

Today the best example of rule based access control would be a firewall. All rules are imposed globally to any user attempting to connect through the device. This is NOT the case with MAC.

I strongly recommend you read carefully the following document:

NISTIR-7316 at http://csrc.nist.gov/publications/nistir/7316/NISTIR-7316.pdf

It is one of the best Access Control Study document to prepare for the exam. Usually I tell people not to worry about the hundreds of NIST documents and other reference. This document is an exception. Take some time to read it.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.
and
NISTIR-7316 at http://csrc.nist.gov/publications/nistir/7316/NISTIR-7316.pdf
and
Conrad, Eric; Misenar, Seth; Feldman, Joshua (2012-09-01). CISSP Study Guide (Kindle Locations 651-652). Elsevier Science (reference). Kindle Edition.

QUESTION 63
The type of discretionary access control (DAC) that is based on an individual's identity is also called:

A. Identity-based Access control
B. Rule-based Access control
C. Non-Discretionary Access Control
D. Lattice-based Access control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
An identity-based access control is a type of Discretionary Access Control (DAC) that is based on an individual's identity.

DAC is good for low level security environment. The owner of the file decides who has access to the file.

If a user creates a file, he is the owner of that file. An identifier for this user is placed in the file header and/or in an access control matrix within the operating system.

Ownership might also be granted to a specific individual. For example, a manager for a certain department might be made the owner of the files and resources within her department. A system that uses discretionary access control (DAC) enables the owner of the resource to specify which subjects can access specific resources.

This model is called discretionary because the control of access is based on the discretion of the owner. Many times department managers, or business unit managers , are the owners of the data within their specific department. Being the owner, they can specify who should have access and who should not.

Reference(s) used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 220). McGraw-Hill . Kindle Edition.

QUESTION 64

Which access control type has a central authority that determine to what objects the subjects have access to and it is based on role or on the organizational security policy?

A. Mandatory Access Control
B. Discretionary Access Control
C. Non-Discretionary Access Control
D. Rule-based Access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Non Discretionary Access Control include Role Based Access Control (RBAC) and Rule Based Access Control (RBAC or RuBAC). RABC being a subset of NDAC, it was easy to eliminate RBAC as it was covered under NDAC already.

Some people think that RBAC is synonymous with NDAC but RuBAC would also fall into this category.

Discretionary Access control is for environment with very low level of security. There is no control on the dissemination of the information. A user who has access to a file can copy the file or further share it with other users.

Rule Based Access Control is when you have ONE set of rules applied uniformly to all users. A good example would be a firewall at the edge of your network. A single rule based is applied against any packets received from the internet.

Mandatory Access Control is a very rigid type of access control. The subject must dominate the object and the subject must have a Need To Know to access the information. Objects have labels that indicate the sensitivity (classification) and there is also categories to enforce the Need To Know (NTK).

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 65
What is called the type of access control where there are pairs of elements that have the least upper bound of values and greatest lower bound of values?

A. Mandatory model
B. Discretionary model
C. Lattice model
D. Rule model

Correct Answer: C

Section: Access Control
Explanation

Explanation/Reference:
In a lattice model, there are pairs of elements that have the least upper bound of values and greatest lower bound of values.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.

QUESTION 66
Which of the following control pairing places emphasis on "soft" mechanisms that support the access control objectives?

A. Preventive/Technical Pairing
B. Preventive/Administrative Pairing
C. Preventive/Physical Pairing
D. Detective/Administrative Pairing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Soft Control is another way of referring to Administrative control.

Technical and Physical controls are NOT soft control, so any choice listing them was not the best answer.

Preventative/Technical is incorrect because although access control can be technical control, it is commonly not referred to as a "soft" control

Preventative/Administrative is correct because access controls are preventative in nature. it is always best to prevent a negative event, however there are times where controls might fail and you cannot prevent everything. Administrative controls are roles, responsibilities, policies, etc which are usually paper based. In the administrative category you would find audit, monitoring, and security awareness as well.

Preventative/Physical pairing is incorrect because Access controls with an emphasis on "soft" mechanisms conflict with the basic concept of physical controls, physical controls are usually tangible objects such as fences, gates, door locks, sensors, etc...

Detective/Administrative Pairing is incorrect because access control is a preventative control used to control access, not to detect violations to access.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.

QUESTION 67

Which of the following control pairings include: organizational policies and procedures, pre-employment background checks, strict hiring practices, employment agreements, employee termination procedures, vacation scheduling, labeling of sensitive materials, increased supervision, security awareness training, behavior awareness, and sign-up procedures to obtain access to information systems and networks?

A. Preventive/Administrative Pairing
B. Preventive/Technical Pairing
C. Preventive/Physical Pairing
D. Detective/Administrative Pairing

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The Answer: Preventive/Administrative Pairing: These mechanisms include organizational policies and procedures, pre-employment background checks, strict hiring practices, employment agreements, friendly and unfriendly employee termination procedures, vacation scheduling, labeling of sensitive materials, increased supervision, security awareness training, behavior awareness, and sign-up procedures to obtain access to information systems and networks.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.

QUESTION 68
Technical controls such as encryption and access control can be built into the operating system, be software applications, or can be supplemental hardware/ software units. Such controls, also known as logical controls, represent which pairing?

A. Preventive/Administrative Pairing
B. Preventive/Technical Pairing
C. Preventive/Physical Pairing
D. Detective/Technical Pairing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Preventive/Technical controls are also known as logical controls and can be built into the operating system, be software applications, or can be supplemental hardware/software units.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.

QUESTION 69

What is called the use of technologies such as fingerprint, retina, and iris scans to authenticate the individuals requesting access to resources?

A. Micrometrics
B. Macrometrics

C. Biometrics D. MicroBiometrics

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 35.

QUESTION 70
What are called user interfaces that limit the functions that can be selected by a user?

A. Constrained user interfaces
B. Limited user interfaces
C. Mini user interfaces
D. Unlimited user interfaces

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Constrained user interfaces limit the functions that can be selected by a user.

Another method for controlling access is by restricting users to specific functions based on their role in the system. This is typically implemented by limiting available menus, data views, encryption, or by physically constraining the user interfaces.

This is common on devices such as an automated teller machine (ATM). The advantage of a constrained user interface is that it limits potential avenues of attack and system failure by restricting the processing options that are available to the user.

On an ATM machine, if a user does not have a checking account with the bank he or she will not be shown the “Withdraw money from checking” option. Likewise, an information system might have an “Add/Remove Users” menu option for administrators, but if a normal, non-administrative user logs in he or she will not even see that menu option. By not even identifying potential options for non-qualifying users, the system limits the potentially harmful execution of unauthorized system or application commands.

Many database management systems have the concept of “views.” A database view is an extract of the data stored in the database that is filtered based on predefined user or system criteria. This permits multiple users to access the same database while only having the ability to access data they need (or are allowed to have) and not data for another user. The use of database views is another example of a constrained user interface.

The following were incorrect answers:
All of the other choices presented were bogus answers.

The following reference(s) were used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1989-2002). Auerbach Publications. Kindle Edition.

QUESTION 71
What would be the name of a Logical or Virtual Table dynamically generated to restrict the information a user can access in a database?

A. Database Management system
B. Database views
C. Database security
D. Database shadowing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
The Answer: Database views; Database views are mechanisms that restrict access to the information that a user can access in a database.Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 35.

Wikipedia has a detailed explantion as well:
In database theory, a view is a virtual or logical table composed of the result set of a query. Unlike ordinary tables (base tables) in a relational database, a view is not part of the physical schema: it is a dynamic, virtual table computed or collated from data in the database. Changing the data in a table alters the data shown in the view.

Views can provide advantages over tables;

They can subset the data contained in a table
They can join and simplify multiple tables into a single virtual table
Views can act as aggregated tables, where aggregated data (sum, average etc.) are calculated and presented as part of the data
Views can hide the complexity of data, for example a view could appear as Sales2000 or Sales2001, transparently partitioning the actual underlying table
Views do not incur any extra storage overhead

Depending on the SQL engine used, views can provide extra security.
Limit the exposure to which a table or tables are exposed to outer world

Just like functions (in programming) provide abstraction, views can be used to create abstraction. Also, just like functions, views can be nested, thus one view can aggregate data from other views. Without the use of views it would be much harder to normalise databases above second normal form. Views can make it easier to create lossless join decomposition.

QUESTION 72
The control measures that are intended to reveal the violations of security policy using software and hardware are associated with:

A. Preventive/physical
B. Detective/technical
C. Detective/physical
D. Detective/administrative

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
The detective/technical control measures are intended to reveal the violations of security policy using technical means.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 35.

QUESTION 73
The controls that usually require a human to evaluate the input from sensors or cameras to determine if a real threat exists are associated with:

A. Preventive/physical
B. Detective/technical
C. Detective/physical
D. Detective/administrative

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Detective/physical controls usually require a human to evaluate the input from sensors or cameras to determine if a real threat exists.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 74
A central authority determines what subjects can have access to certain objects based on the organizational security policy is called:

A. Mandatory Access Control
B. Discretionary Access Control
C. Non-Discretionary Access Control
D. Rule-based Access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
A central authority determines what subjects can have access to certain objects based on the organizational security policy.

The key focal point of this question is the 'central authority' that determines access rights.

Cecilia one of the quiz user has sent me feedback informing me that NIST defines MAC as: "MAC Policy means that Access Control Policy Decisions are made by a CENTRAL AUTHORITY. Which seems to indicate there could be two good answers to this question.

However if you read the NISTR document mentioned in the references below, it is also mentioned that: MAC is the most mentioned NDAC policy. So MAC is a form of NDAC policy.

Within the same document it is also mentioned: "In general, all access control policies other than DAC are grouped in the category of non- discretionary access control (NDAC). As the name implies, policies in this category have rules that are not established at the discretion of the user. Non-discretionary policies establish controls that cannot be changed by users, but only through administrative action."

Under NDAC you have two choices:
Rule Based Access control and Role Base Access Control

MAC is implemented using RULES which makes it fall under RBAC which is a form of NDAC. It is a subset of NDAC.

This question is representative of what you can expect on the real exam where you have more than once choice that seems to be right. However, you have to look closely if one of the choices would be higher level or if one of the choice falls under one of the other choice. In this case NDAC is a better choice because MAC is falling under NDAC through the use of Rule Based Access Control.

The following are incorrect answers:

MANDATORY ACCESS CONTROL

In Mandatory Access Control the labels of the object and the clearance of the subject determines access rights, not a central authority. Although a central authority (Better known as the Data Owner) assigns the label to the object, the system does the determination of access rights automatically by comparing the Object label with the Subject clearance. The subject clearance MUST dominate (be equal or higher) than the object being accessed.

The need for a MAC mechanism arises when the security policy of a system dictates that:
1. Protection decisions must not be decided by the object owner.
2. The system must enforce the protection decisions (i.e., the system enforces the security policy over the wishes or intentions of the object owner).

Usually a labeling mechanism and a set of interfaces are used to determine access based on the MAC policy; for example, a user who is running a process at the Secret classification should not be allowed to read a file with a label of Top Secret. This is known as the “simple security rule,” or “no read up.”

Conversely, a user who is running a process with a label of Secret should not be allowed to write to a file with a label of Confidential. This rule is called the “*property” (pronounced “star property”) or “no write down.” The *-property is required to maintain system security in an automated environment.

DISCRETIONARY ACCESS CONTROL
In Discretionary Access Control the rights are determined by many different entities, each of the persons who have created files and they are the owner of that file, not one central authority.

DAC leaves a certain amount of access control to the discretion of the object's owner or anyone else who is authorized to control the object's access. For example, it is generally used to limit a user's access to a file; it is the owner of the file who controls other users' accesses to the file. Only those users specified by the owner may have some combination of read, write, execute, and other permissions to the file.

DAC policy tends to be very flexible and is widely used in the commercial and government sectors. However, DAC is known to be inherently weak for two reasons:

First, granting read access is transitive; for example, when Ann grants Bob read access to a file, nothing stops Bob from copying the contents of Ann’s file to an object that Bob controls. Bob may now grant any other user access to the copy of Ann’s file without Ann’s knowledge.

Second, DAC policy is vulnerable to Trojan horse attacks. Because programs inherit the identity of the invoking user, Bob may, for example, write a program for Ann that, on the surface, performs some useful function, while at the same time destroys the contents of Ann’s files. When investigating the problem, the audit files would indicate that Ann destroyed her own files. Thus, formally, the drawbacks of DAC are as follows:

Discretionary Access Control (DAC) Information can be copied from one object to another; therefore, there is no real assurance on the flow of information in a system.
No restrictions apply to the usage of information when the user has received it.
The privileges for accessing objects are decided by the owner of the object, rather than through a system-wide policy that reflects the organization’s security requirements.

ACLs and owner/group/other access control mechanisms are by far the most common mechanism for implementing DAC policies. Other mechanisms, even though not designed with DAC in mind, may have the capabilities to implement a DAC policy.

RULE BASED ACCESS CONTROL
In Rule-based Access Control a central authority could in fact determine what subjects can have access when assigning the rules for access. However, the rules actually determine the access and so this is not the most correct answer.

RuBAC (as opposed to RBAC, role-based access control) allow users to access systems and information based on pre determined and configured rules. It is important to note that there is no commonly understood definition or formally defined standard for rule-based access control as there is for DAC, MAC, and RBAC. "Rule-based access" is a generic term applied to systems that allow some form of organization-defined rules, and therefore rule-based access control encompasses a broad range of systems. RuBAC may in fact be combined with other models, particularly RBAC or DAC. A RuBAC system intercepts every access request and compares the rules with the rights of the user to make an access decision. Most of the rule-based access control relies on a security label system, which dynamically composes a set of rules defined by a security policy. Security labels are attached to all objects, including files, directories, and devices. Sometime roles to subjects (based on their attributes) are assigned as well. RuBAC meets the business needs as well as the technical needs of controlling service access. It allows business rules to be applied to access control—for example, customers who have overdue balances may be denied service access. As a mechanism for MAC, rules of RuBAC cannot be changed by users. The rules can be established by any attributes of a system related to the users such as domain, host, protocol, network, or IP addresses. For example, suppose that a user wants to access an object in another network on the other side of a router. The router employs RuBAC with the rule composed by the network addresses, domain, and protocol to decide whether or not the user can be granted access. If employees change their roles within the organization, their existing authentication credentials remain in effect and do not need to be re configured. Using rules in conjunction with roles adds greater flexibility because rules can be applied to people as well as to devices. Rule-based access control can be combined with role-based access control, such that the role of a user is one of the attributes in rule setting. Some provisions of access control systems have rule- based policy engines in addition to a role-based policy engine and certain implemented dynamic policies [Des03]. For example, suppose that two of the primary types of software users are product engineers and quality engineers. Both groups usually have access to the same data, but they have different roles to perform in relation to the data and the application's function. In addition, individuals within each group have different job responsibilities that may be identified using several types of attributes such as developing programs and testing areas. Thus, the access decisions can be made in real time by a scripted policy that regulates the access between the groups of product engineers and quality engineers, and each individual within these groups. Rules can either replace or complement role-based access control. However, the creation of rules and security policies is also a complex process, so each organization will need to strike the appropriate balance.

References used for this question:
http://csrc.nist.gov/publications/nistir/7316/NISTIR-7316.pdf
and
AIO v3 p162-167 and OIG (2007) p.186-191
also
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 75
What is called the act of a user professing an identity to a system, usually in the form of a log-on ID?

A. Authentication
B. Identification
C. Authorization
D. Confidentiality

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Identification is the act of a user professing an identity to a system, usually in the form of a log-on ID to the system.

Identification is nothing more than claiming you are somebody. You identify yourself when you speak to someone on the phone that you don't know, and they ask you who they're speaking to. When you say, "I'm Jason.", you've just identified yourself.

In the information security world, this is analogous to entering a username. It's not analogous to entering a password. Entering a password is a method for verifying that you are who you identified yourself as.

NOTE: The word "professing" used above means: "to say that you are, do, or feel something when other people doubt what you say". This is exactly what happen when you provide your identifier (identification), you claim to be someone but the system cannot take your word for it, you must further Authenticate to the system to prove who you claim to be.

The following are incorrect answers:

Authentication: is how one proves that they are who they say they are. When you claim to be Jane Smith by logging into a computer system as "jsmith", it's most likely going to ask you for a password. You've claimed to be that person by entering the name into the username field (that's the identification part), but now you have to prove that you are really that person.

Many systems use a password for this, which is based on "something you know", i.e. a secret between you and the system.
Another form of authentication is presenting something you have, such as a driver's license, an RSA token, or a smart card.

You can also authenticate via something you are. This is the foundation for biometrics. When you do this, you first identify yourself and then submit a thumb print, a retina scan, or another form of bio-based authentication.

Once you've successfully authenticated, you have now done two things: you've claimed to be someone, and you've proven that you are that person. The only thing that's left is for the system to determine what you're allowed to do.

Authorization: is what takes place after a person has been both identified and authenticated; it's the step determines what a person can then do on the system.

An example in people terms would be someone knocking on your door at night. You say, "Who is it?", and wait for a response. They say, "It's John." in order to identify themselves. You ask them to back up into the light so you can see them through the peephole. They do so, and you authenticate them based on what they look like (biometric). At that point you decide they can come inside the house.

If they had said they were someone you didn't want in your house (identification), and you then verified that it was that person (authentication), the authorization phase would not include access to the inside of the house.

Confidentiality: Is one part of the CIA triad. It prevents sensitive information from reaching the wrong people, while making sure that the right people can in fact get it. A good example is a credit card number while shopping online, the merchant needs it to clear the transaction but you do not want your informaiton exposed over the network, you would use a secure link such as SSL, TLS, or some tunneling tool to protect the information from prying eyes between point A and point B. Data encryption is a common method of ensuring confidentiality.

The other parts of the CIA triad are listed below:
Integrity involves maintaining the consistency, accuracy, and trustworthiness of data over its entire life cycle. Data must not be changed in transit, and steps must be taken to ensure that data cannot be altered by unauthorized people (for example, in a breach of confidentiality). In addition, some means must be in place to detect any changes in data that might occur as a result of non-human-caused events such as an electromagnetic pulse (EMP) or server crash. If an unexpected change occurs, a backup copy must be available to restore the affected data to its correct state.

Availability is best ensured by rigorously maintaining all hardware, performing hardware repairs immediately when needed, providing a certain measure of redundancy and failover, providing adequate communications bandwidth and preventing the occurrence of bottlenecks, implementing emergency backup power systems, keeping current with all necessary system upgrades, and guarding against malicious actions such as denial-of-service (DoS) attacks.

Reference used for this question:

http://whatis.techtarget.com/definition/Confidentiality-integrity-and-availability-CIA http://www.danielmiessler.com/blog/security-identification-authentication-and-authorization http://www.merriam-webster.com/dictionary/profess

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 76
What is called the verification that the user's claimed identity is valid and is usually implemented through a user password at log-on time?

A. Authentication
B. Identification
C. Integrity
D. Confidentiality

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Authentication is verification that the user's claimed identity is valid and is usually implemented through a user password at log-on time.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 77

Which one of the following factors is NOT one on which Authentication is based?

A. Type 1. Something you know, such as a PIN or password
B. Type 2. Something you have, such as an ATM card or smart card
C. Type 3. Something you are (based upon one or more intrinsic physical or behavioral traits), such as a fingerprint or retina scan
D. Type 4. Something you are, such as a system administrator or security administrator

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Authentication is based on the following three factor types:

Type 1. Something you know, such as a PIN or password
Type 2. Something you have, such as an ATM card or smart card
Type 3. Something you are (Unique physical characteristic), such as a fingerprint or retina scan

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.
Also: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (pages 132-133).

QUESTION 78
Which type of password provides maximum security because a new password is required for each new log-on?

A. One-time or dynamic password
B. Congnitive password
C. Static password
D. Passphrase

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
"one-time password" provides maximum security because a new password is required for each new log-on.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 79

What is called a password that is the same for each log-on session?

A. "one-time password"
B. "two-time password"
C. static password
D. dynamic password

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 80

What is called a sequence of characters that is usually longer than the allotted number for a password?

A. passphrase
B. cognitive phrase
C. anticipated phrase
D. Real phrase

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
A passphrase is a sequence of characters that is usually longer than the allotted number for a password.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, page 37.

QUESTION 81
Which of the following would be true about Static password tokens?

A. The owner identity is authenticated by the token B.
The owner will never be authenticated by the token.
C. The owner will authenticate himself to the system.
D. The token does not authenticates the token owner but the system.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Password Tokens
Tokens are electronic devices or cards that supply a user's password for them. A token system can be used to supply either a static or a dynamic password. There is a big difference between the static and dynamic systems, a static system will normally log a user in but a dynamic system the user will often have to log themselves in.

Static Password Tokens:
The owner identity is authenticated by the token. This is done by the person who issues the token to the owner (normally the employer). The owner of the token is now authenticated by "something you have". The token authenticates the identity of the owner to the information system. An example of this occurring is when an employee swipes his or her smart card over an electronic lock to gain access to a store room.

Synchronous Dynamic Password Tokens:
This system is a lot more complex then the static token password. The synchronous dynamic password tokens generate new passwords at certain time intervals that are synched with the main system. The password is generated on a small device similar to a pager or a calculator that can often be attached to the user's key ring. Each password is only valid for a certain time period, typing in the wrong password in the wrong time period will invalidate the authentication. The time factor can also be the systems downfall. If a clock on the system or the password token device becomes out of synch, a user can have troubles authenticating themselves to the system.

Asynchronous Dynamic Password Tokens:
The clock synching problem is eliminated with asynchronous dynamic password tokens. This system works on the same principal as the synchronous one but it does not have a time frame. A lot of big companies use this system especially for employee's who may work from home on the companies VPN (Virtual private Network).

Challenge Response Tokens:
This is an interesting system. A user will be sent special "challenge" strings at either random or timed intervals. The user inputs this challenge string into their token device and the device will respond by generating a challenge response. The user then types this response into the system and if it is correct they are authenticated.

Reference(s) used for this question:

http://www.informit.com/guides/content.aspx?g=security&seqNum=146
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.

QUESTION 82
In Synchronous dynamic password tokens:

A. The token generates a new password value at fixed time intervals (this password could be based on the time of day encrypted with a secret key).
B. The token generates a new non-unique password value at fixed time intervals (this password could be based on the time of day encrypted with a secret key).
C. The unique password is not entered into a system or workstation along with an owner's PIN.
D. The authentication entity in a system or workstation knows an owner's secret key and PIN, and the entity verifies that the entered password is invalid and that it was entered during the invalid time window.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Synchronous dynamic password tokens:

- The token generates a new password value at fixed time intervals (this password could be the time of day encrypted with a secret key).
- the unique password is entered into a system or workstation along with an owner's PIN.
- The authentication entity in a system or workstation knows an owner's secret key and PIN, and the entity verifies that the entered password is valid and that it was entered during the valid time window.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.

QUESTION 83
Which of the following choices describe a Challenge-response tokens generation?

A. A workstation or system that generates a random challenge string that the user enters into the token when prompted along with the proper PIN.
B. A workstation or system that generates a random login id that the user enters when prompted along with the proper PIN.

C. A special hardware device that is used to generate ramdom text in a cryptography system.
D. The authentication mechanism in the workstation or system does not determine if the owner should be authenticated.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Challenge-response tokens are:
- A workstation or system generates a random challenge string and the owner enters the string into the token along with the proper PIN.
- The token generates a response that is then entered into the workstation or system.
- The authentication mechanism in the workstation or system then determines if the owner should be authenticated.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.
Also: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (pages 136-137).

QUESTION 84
What is called an automated means of identifying or authenticating the identity of a living person based on physiological or behavioral characteristics?

A. Biometrics
B. Micrometrics
C. Macrometrics
D. MicroBiometrics

Correct Answer: A
Section: Access Control
Explanation
Explanation/Reference:
The Answer: Biometrics; Biometrics are defined as an automated means of identifying or authenticating the identity of a living person based on physiological or behavioral characteristics.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Pages 37,38.

QUESTION 85
In biometrics, "one-to-many" search against database of stored biometric images is done in:

A. Authentication
B. Identification
C. Identities

D. Identity-based access control

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
In biometrics, identification is a "one-to-many" search of an individual's characteristics from a database of stored images.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 38.

QUESTION 86
In biometrics, the "one-to-one" search used to verify claim to an identity made by a person is considered:

A. Authentication
B. Identification
C. Auditing
D. Authorization

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Biometric devices can be use for either IDENTIFICATION or AUTHENTICATION
ONE TO ONE is for AUTHENTICATION
This means that you as a user would provide some biometric credential such as your fingerprint. Then they will compare the template that you have provided with the one stored in the Database. If the two are exactly the same that prove that you are who you pretend to be.

ONE TO MANY is for IDENTIFICATION
A good example of this would be within airport. Many airports today have facial recognition cameras, as you walk through the airport it will take a picture of your face and then compare the template (your face) with a database full of templates and see if there is a match between your template and the ones stored in the Database. This is for IDENTIFICATION of a person.

Some additional clarification or comments that might be helpful are: Biometrics establish authentication using specific information and comparing results to expected data. It does not perform well for identification purposes such as scanning for a person's face in a moving crowd for example.

Identification methods could include: username, user ID, account number, PIN, certificate, token, smart card, biometric device or badge.

Auditing is a process of logging or tracking what was done after the identity and authentication process is completed.

Authorization is the rights the subject is given and is performed after the identity is established.

Reference OIG (2007) p148, 167

Authentication in biometrics is a "one-to-one" search to verify claim to an identity made by a person.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 38.

QUESTION 87
What is called the percentage of valid subjects that are falsely rejected by a Biometric Authentication system?

A. False Rejection Rate (FRR) or Type I Error
B. False Acceptance Rate (FAR) or Type II Error
C. Crossover Error Rate (CER)
D. True Rejection Rate (TRR) or Type III Error

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The percentage of valid subjects that are falsely rejected is called the False Rejection Rate (FRR) or Type I Error.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 38.

QUESTION 88
What is called the percentage at which the False Rejection Rate equals the False Acceptance Rate?

A. False Rejection Rate (FRR) or Type I Error

B. False Acceptance Rate (FAR) or Type II Error
C. Crossover Error Rate (CER)
D. Failure to enroll rate (FTE or FER)

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:

The percentage at which the False Rejection Rate equals the False Acceptance Rate is called the Crossover Error Rate (CER). Another name for the CER is the Equal Error Rate (EER), any of the two terms could be used.

Equal error rate or crossover error rate (EER or CER)
It is the rate at which both accept and reject errors are equal. The EER is a quick way to compare the accuracy of devices with different ROC curves. In general, the device with the lowest EER is most accurate.

The other choices were all wrong answers:

The following are used as performance metrics for biometric systems:

false accept rate or false match rate (FAR or FMR): the probability that the system incorrectly matches the input pattern to a non-matching template in the database. It measures the percent of invalid inputs which are incorrectly accepted. This is when an impostor would be accepted by the system.

False reject rate or false non-match rate (FRR or FNMR): the probability that the system fails to detect a match between the input pattern and a matching template in the database. It measures the percent of valid inputs which are incorrectly rejected. This is when a valid company employee would be rejected by the system.

Failure to enroll rate (FTE or FER): the rate at which attempts to create a template from an input is unsuccessful. This is most commonly caused by low quality inputs.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 38.
and
https://en.wikipedia.org/wiki/Biometrics

QUESTION 89
Considerations of privacy, invasiveness, and psychological and physical comfort when using the system are important elements for which of the following?

A. Accountability of biometrics systems
B. Acceptability of biometrics systems
C. Availability of biometrics systems
D. Adaptability of biometrics systems

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Acceptability refers to considerations of privacy, invasiveness, and psychological and physical comfort when using the system.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 39.

QUESTION 90
Which of the following biometric characteristics cannot be used to uniquely authenticate an individual's identity?

A. Retina scans
B. Iris scans
C. Palm scans
D. Skin scans

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The following are typical biometric characteristics that are used to uniquely authenticate an individual's identity:

Fingerprints
Retina scans
Iris scans
Facial scans
Palm scans
Hand geometry
Voice
Handwritten signature dynamics

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 39.
And: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (pages 127-131).

QUESTION 91
Which of the following offers advantages such as the ability to use stronger passwords, easier password administration, one set of credential, and faster resource access?

A. Smart cards
B. Single Sign-On (SSO)
C. Symmetric Ciphers

D. Public Key Infrastructure (PKI)

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
The advantages of SSO include having the ability to use stronger passwords, easier administration as far as changing or deleting the passwords, minimize the risks of orphan accounts, and requiring less time to access resources.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 39.

QUESTION 92
Which of the following describes the major disadvantage of many Single Sign-On (SSO) implementations?

A. Once an individual obtains access to the system through the initial log-on, they have access to all resources within the environment that the account has access to.
B. The initial logon process is cumbersome to discourage potential intruders.
C. Once a user obtains access to the system through the initial log-on, they only need to logon to some applications.
D. Once a user obtains access to the system through the initial log-on, he has to logout from all other systems

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Single Sign-On is a distrubuted Access Control methodology where an individual only has to authenticate once and would have access to all primary and secondary network domains. The individual would not be required to re-authenticate when they needed additional resources. The security issue that this creates is if a fraudster is able to compromise those credential they too would have access to all the resources that account has access to.

All the other answers are incorrect as they are distractors.

QUESTION 93
Which of the following is implemented through scripts or smart agents that replays the users multiple log-ins against authentication servers to verify a user's identity which permit access to system services?

A. Single Sign-On
B. Dynamic Sign-On
C. Smart cards

D. Kerberos

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
SSO can be implemented by using scripts that replay the users multiple log-ins against authentication servers to verify a user's identity and to permit access to system services.

Single Sign on was the best answer in this case because it would include Kerberos.

When you have two good answers within the 4 choices presented you must select the BEST one. The high level choice is always the best. When one choice would include the other one that would be the best as well.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 40.

QUESTION 94
Which of the following is a trusted, third party authentication protocol that was developed under Project Athena at MIT?

A. Kerberos
B. SESAME
C. KryptoKnight
D. NetSP

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Kerberos is a trusted, third party authentication protocol that was developed under Project Athena at MIT.

Kerberos is a network authentication protocol. It is designed to provide strong authentication for client/server applications by using secret-key cryptography. A free implementation of this protocol is available from the Massachusetts Institute of Technology. Kerberos is available in many commercial products as well.

The Internet is an insecure place. Many of the protocols used in the Internet do not provide any security. Tools to "sniff" passwords off of the network are in common use by systems crackers. Thus, applications which send an unencrypted password over the network are extremely vulnerable. Worse yet, other client/

server applications rely on the client program to be "honest" about the identity of the user who is using it. Other applications rely on the client to restrict its activities to those which it is allowed to do, with no other enforcement by the server.

Some sites attempt to use firewalls to solve their network security problems. Unfortunately, firewalls assume that "the bad guys" are on the outside, which is often a very bad assumption. Most of the really damaging incidents of computer crime are carried out by insiders. Firewalls also have a significant disadvantage in that they restrict how your users can use the Internet. (After all, firewalls are simply a less extreme example of the dictum that there is nothing more secure then a computer which is not connected to the network --- and powered off!) In many places, these restrictions are simply unrealistic and unacceptable.

Kerberos was created by MIT as a solution to these network security problems. The Kerberos protocol uses strong cryptography so that a client can prove its identity to a server (and vice versa) across an insecure network connection. After a client and server have used Kerberos to prove their identity, they can also encrypt all of their communications to assure privacy and data integrity as they go about their business.

Kerberos is freely available from MIT, under a copyright permission notice very similar to the one used for the BSD operating and X11 Windowing system. MIT provides Kerberos in source form, so that anyone who wishes to use it may look over the code for themselves and assure themselves that the code is trustworthy. In addition, for those who prefer to rely on a professional supported product, Kerberos is available as a product from many different vendors.

In summary, Kerberos is a solution to your network security problems. It provides the tools of authentication and strong cryptography over the network to help you secure your information systems across your entire enterprise. We hope you find Kerberos as useful as it has been to us. At MIT, Kerberos has been invaluable to our Information/Technology architecture.

KryptoKnight is a Peer to Peer authentication protocol incorporated into the NetSP product from IBM.

SESAME is an authentication and access control protocol, that also supports communication confidentiality and integrity. It provides public key based authentication along with the Kerberos style authentication, that uses symmetric key cryptography. Sesame supports the Kerberos protocol and adds some security extensions like public key based authentication and an ECMA-style Privilege Attribute Service. The complete Sesame protocol is a two step process. In the first step, the client successfully authenticates itself to the Authentication Server and obtains a ticket that can be presented to the Privilege Attribute Server. In the second step, the initiator obtains proof of his access rights in the form of Privilege Attributes Certificate (PAC). The PAC is a specific form of Access Control Certificate as defined in the ECMA-219 document. This document describes the extensions to Kerberos for public key based authentication as adopted in Sesame.

SESAME, KryptoKnight, and NetSP never took off and the protocols are no longer commonly used.

References:
http://www.cmf.nrl.navy.mil/CCS/people/kenh/kerberos-faq.html#whatis
and
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 40.

QUESTION 95
Which of the following is NOT true of the Kerberos protocol?

A. Only a single login is required per session.
B. The initial authentication steps are done using public key algorithm.
C. The KDC is aware of all systems in the network and is trusted by all of them
D. It performs mutual authentication

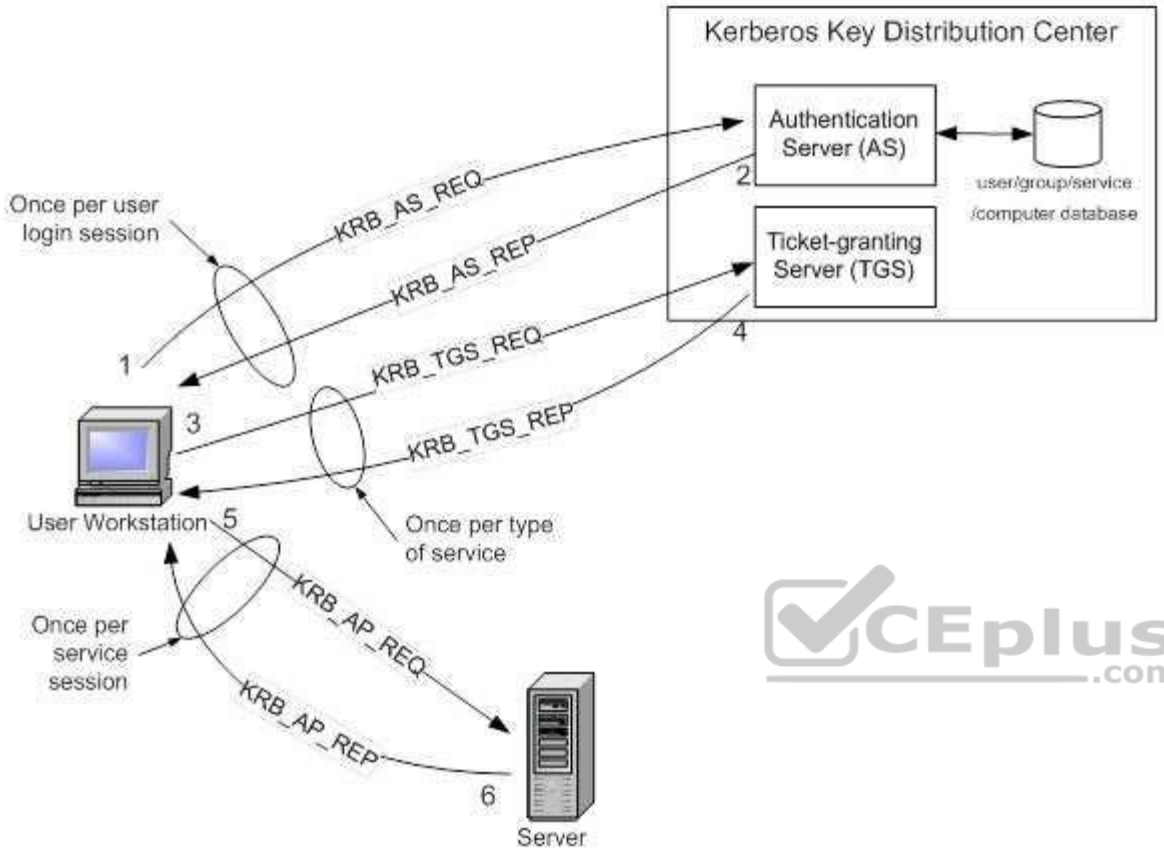
Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Kerberos is a network authentication protocol. It is designed to provide strong authentication for client/server applications by using secret-key cryptography. It has the following characteristics:

It is secure: it never sends a password unless it is encrypted.
Only a single login is required per session. Credentials defined at login are then passed between resources without the need for additional logins.
The concept depends on a trusted third party – a Key Distribution Center (KDC). The KDC is aware of all systems in the network and is trusted by all of them.
It performs mutual authentication, where a client proves its identity to a server and a server proves its identity to the client.

Kerberos introduces the concept of a Ticket-Granting Server/Service (TGS). A client that wishes to use a service has to receive a ticket from the TGS – a ticket is a time-limited cryptographic message – giving it access to the server. Kerberos also requires an Authentication Server (AS) to verify clients. The two servers combined make up a KDC.

Within the Windows environment, Active Directory performs the functions of the KDC. The following figure shows the sequence of events required for a client to gain access to a service using Kerberos authentication. Each step is shown with the Kerberos message associated with it, as defined in RFC 4120 “The Kerberos Network Authorization Service (V5)”.



Kerberos Authentication Step by Step

Step 1: The user logs on to the workstation and requests service on the host. The workstation sends a message to the Authorization Server requesting a ticket granting ticket (TGT).

Step 2: The Authorization Server verifies the user's access rights in the user database and creates a TGT and session key. The Authorization Sever encrypts the results using a key derived from the user's password and sends a message back to the user workstation.

The workstation prompts the user for a password and uses the password to decrypt the incoming message. When decryption succeeds, the user will be able to use the TGT to request a service ticket.

Step 3: When the user wants access to a service, the workstation client application sends a request to the Ticket Granting Service containing the client name, realm name and a timestamp. The user proves his identity by sending an authenticator encrypted with the session key received in Step 2.

Step 4: The TGS decrypts the ticket and authenticator, verifies the request, and creates a ticket for the requested server. The ticket contains the client name and optionally the client IP address. It also contains the realm name and ticket lifespan. The TGS returns the ticket to the user workstation. The returned message contains two copies of a server session key – one encrypted with the client password, and one encrypted by the service password.

Step 5: The client application now sends a service request to the server containing the ticket received in Step 4 and an authenticator. The service authenticates the request by decrypting the session key. The server verifies that the ticket and authenticator match, and then grants access to the service. This step as described does not include the authorization performed by the Intel AMT device, as described later.

Step 6: If mutual authentication is required, then the server will reply with a server authentication message.

The Kerberos server knows "secrets" (encrypted passwords) for all clients and servers under its control, or it is in contact with other secure servers that have this information. These "secrets" are used to encrypt all of the messages shown in the figure above.
To prevent "replay attacks," Kerberos uses timestamps as part of its protocol definition. For timestamps to work properly, the clocks of the client and the server need to be in synch as much as possible. In other words, both computers need to be set to the same time and date. Since the clocks of two computers are often out of synch, administrators can establish a policy to establish the maximum acceptable difference to Kerberos between a client's clock and server's clock. If the difference between a client's clock and the server's clock is less than the maximum time difference specified in this policy, any timestamp used in a session between the two computers will be considered authentic. The maximum difference is usually set to five minutes.

Note that if a client application wishes to use a service that is "Kerberized" (the service is configured to perform Kerberos authentication), the client must also be Kerberized so that it expects to support the necessary message responses.
For more information about Kerberos, see http://web.mit.edu/kerberos/www/.

References:
Introduction to Kerberos Authentication from Intel
and
http://www.zeroshell.net/eng/kerberos/Kerberos-definitions/#1.3.5.3
and
http://www.ietf.org/rfc/rfc4120.txt

QUESTION 96
Which of the following is addressed by Kerberos?

A. Confidentiality and Integrity
B. Authentication and Availability
C. Validation and Integrity
D. Auditability and Integrity

Correct Answer: A
Section: Access Control
Explanation
Explanation/Reference:
Kerberos addresses the confidentiality and integrity of information.
It also addresses primarily authentication but does not directly address availability.

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 42.
and
https://www.ietf.org/rfc/rfc4120.txt
and
http://learn-networking.com/network-security/how-kerberos-authentication-works

QUESTION 97
Kerberos is vulnerable to replay in which of the following circumstances?

A. When a private key is compromised within an allotted time window.
B. When a public key is compromised within an allotted time window.
C. When a ticket is compromised within an allotted time window.
D. When the KSD is compromised within an allotted time window.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Replay can be accomplished on Kerberos if the compromised tickets are used within an allotted time window.

The security depends on careful implementation:enforcing limited lifetimes for authentication credentials minimizes the threat of of replayed credentials, the KDC must be physically secured, and it should be hardened, not permitting any non-kerberos activities.

Reference:

Official ISC2 Guide to the CISSP, 2007 Edition, page 184
also see:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 42.

QUESTION 98
Like the Kerberos protocol, SESAME is also subject to which of the following?

A. timeslot replay
B. password guessing
C. symmetric key guessing
D. asymmetric key guessing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Sesame is an authentication and access control protocol, that also supports communication confidentiality and integrity. It provides public key based authentication along with the Kerberos style authentication, that uses symmetric key cryptography. Sesame supports the Kerberos protocol and adds some security extensions like public key based authentication and an ECMA-style Privilege Attribute Service.

The users under SESAME can authenticate using either symmetric encryption as in Kerberos or Public Key authentication. When using Symmetric Key authentication as in Kerberos, SESAME is also vulnerable to password guessing just like Kerberos would be. The Symmetric key being used is based on the password used by the user when he logged on the system. If the user has a simple password it could be guessed or compromise. Even thou Kerberos or SESAME may be use, there is still a need to have strong password discipline.

The Basic Mechanism in Sesame for strong authentication is as follow:

The user sends a request for authentication to the Authentication Server as in Kerberos, except that SESAME is making use of public key cryptography for authentication where the client will present his digital certificate and the request will be signed using a digital signature. The signature is communicated to the authentication server through the preauthentication fields. Upon receipt of this request, the authentication server will verifies the certificate, then validate the signature, and if all is fine the AS will issue a ticket granting ticket (TGT) as in Kerberos. This TGT will be use to communicate with the privilage attribute server (PAS) when access to a resource is needed.

Users may authenticate using either a public key pair or a conventional (symmetric) key. If public key cryptography is used, public key data is transported in preauthentication data fields to help establish identity.
Kerberos uses tickets for authenticating subjects to objects and SESAME uses Privileged Attribute Certificates (PAC), which contain the subject's identity, access capabilities for the object, access time period, and lifetime of the PAC. The PAC is digitally signed so that the object can validate that it came from the trusted authentication server, which is referred to as the privilege attribute server (PAS). The PAS holds a similar role as the KDC within Kerberos. After a user successfully authenticates to the authentication service (AS), he is presented with a token to give to the PAS. The PAS then creates a PAC for the user to present to the resource he is trying to access.

Reference(s) used for this question:

http://srg.cs.uiuc.edu/Security/nephilim/Internal/SESAME.txt
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 43.

QUESTION 99
RADIUS incorporates which of the following services?

A. Authentication server and PIN codes.
B. Authentication of clients and static passwords generation.
C. Authentication of clients and dynamic passwords generation.
D. Authentication server as well as support for Static and Dynamic passwords.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
A Network Access Server (NAS) operates as a client of RADIUS. The client is responsible for passing user information to designated RADIUS servers, and then acting on the response which is returned.

RADIUS servers are responsible for receiving user connection requests, authenticating the user, and then returning all configuration information necessary for the client to deliver service to the user.

RADIUS authentication is based on provisions of simple username/password credentials. These credentials are encrypted by the client using a shared secret between the client and the RADIUS server. OIG 2007, Page 513 RADIUS incorporates an authentication server and can make uses of both dynamic and static passwords.

Since it uses the PAP and CHAP protocols, it also incluses static passwords.

RADIUS is an Internet protocol. RADIUS carries authentication, authorization, and configuration information between a Network Access Server and a shared Authentication Server. RADIUS features and functions are described primarily in the IETF (International Engineering Task Force) document RFC2138.

The term " RADIUS" is an acronym which stands for Remote Authentication Dial In User Service.

The main advantage to using a RADIUS approach to authentication is that it can provide a stronger form of authentication. RADIUS is capable of using a strong, two-factor form of authentication, in which users need to possess both a user ID and a hardware or software token to gain access.

Token-based schemes use dynamic passwords. Every minute or so, the token generates a unique 4-, 6- or 8-digit access number that is synchronized with the security server. To gain entry into the system, the user must generate both this one-time number and provide his or her user ID and password.

Although protocols such as RADIUS cannot protect against theft of an authenticated session via some realtime attacks, such as wiretapping, using unique, unpredictable authentication requests can protect against a wide range of active attacks. RADIUS: Key Features and Benefits
Features Benefits

RADIUS supports dynamic passwords and challenge/response passwords.

Improved system security due to the fact that passwords are not static.

It is much more difficult for a bogus host to spoof users into giving up their passwords or password-generation algorithms.

RADIUS allows the user to have a single user ID and password for all computers in a network.

Improved usability due to the fact that the user has to remember only one login combination.

RADIUS is able to:
Prevent RADIUS users from logging in via login (or ftp).
Require them to log in via login (or ftp)
Require them to login to a specific network access server (NAS);
Control access by time of day.

Provides very granular control over the types of logins allowed, on a per-user basis.

The time-out interval for failing over from an unresponsive primary RADIUS server to a backup RADIUS server is site-configurable.

RADIUS gives System Administrator more flexibility in managing which users can login from which hosts or devices.

Stratus Technology Product Brief
http://www.stratus.com/products/vos/openvos/radius.htm

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Pages 43, 44.

Also check: MILLER, Lawrence & GREGORY, Peter, CISSP for Dummies, 2002, Wiley Publishing, Inc., pages 45-46.

QUESTION 100
Which of the following protects a password from eavesdroppers and supports the encryption of communication?

A. Challenge Handshake Authentication Protocol (CHAP)
B. Challenge Handshake Identification Protocol (CHIP) C. Challenge Handshake Encryption Protocol (CHEP)
D. Challenge Handshake Substitution Protocol (CHSP)

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
CHAP: A protocol that uses a three way hanbdshake The server sends the client a challenge which includes a random value(a nonce) to thwart replay attacks. The client responds with the MD5 hash of the nonce and the password.

The authentication is successful if the client's response is the one that the server expected.

Reference: Page 450, OIG 2007.

CHAP protects the password from eavesdroppers and supports the encryption of communication.
Reference: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 44.

QUESTION 101
The Terminal Access Controller Access Control System (TACACS) employs which of the following?

A. a user ID and static password for network access
B. a user ID and dynamic password for network access
C. a user ID and symmetric password for network access
D. a user ID and asymmetric password for network access

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
For networked applications, the Terminal Access Controller Access Control System (TACACS) employs a user ID and a static password for network access.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 44.

QUESTION 102
Which of the following is most relevant to determining the maximum effective cost of access control?

A. the value of information that is protected
B. management's perceptions regarding data importance
C. budget planning related to base versus incremental spending.
D. the cost to replace lost data

Correct Answer: A
Section: Access Control
Explanation
Explanation/Reference:
The cost of access control must be commensurate with the value of the information that is being protected.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 103
Which of the following is NOT a factor related to Access Control?

A. integrity
B. authenticity
C. confidentiality
D. availability

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
These factors cover the integrity, confidentiality, and availability components of information system security.

Integrity is important in access control as it relates to ensuring only authorized subjects can make changes to objects.

Authenticity is different from authentication. Authenticity pertains to something being authentic, not necessarily having a direct correlation to access control.

Confidentiality is pertinent to access control in that the access to sensitive information is controlled to protect confidentiality.

vailability is protected by access controls in that if an attacket attempts to disrupt availability they would first need access.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 104
Which of the following is most appropriate to notify an external user that session monitoring is being conducted?

A. Logon Banners
B. Wall poster
C. Employee Handbook
D. Written agreement

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Banners at the log-on time should be used to notify external users of any monitoring that is being conducted. A good banner will give you a better legal stand and also makes it obvious the user was warned about who should access the system and if it is an unauthorized user then he is fully aware of trespassing.

This is a tricky question, the keyword in the question is External user.

There are two possible answers based on how the question is presented, this question could either apply to internal users or ANY anonymous user.
Internal users should always have a written agreement first, then logon banners serve as a constant reminder.
Anonymous users, such as those logging into a web site, ftp server or even a mail server; their only notification system is the use of a logon banner.

References used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 50.
and
Shon Harris, CISSP All-in-one, 5th edition, pg 873

QUESTION 105
Which of the following pairings uses technology to enforce access control policies?

A. Preventive/Administrative
B. Preventive/Technical
C. Preventive/Physical
D. Detective/Administrative

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:

The preventive/technical pairing uses technology to enforce access control policies.

TECHNICAL CONTROLS
Technical security involves the use of safeguards incorporated in computer hardware, operations or applications software, communications hardware and software, and related devices. Technical controls are sometimes referred to as logical controls.

Preventive Technical Controls
Preventive technical controls are used to prevent unauthorized personnel or programs from gaining remote access to computing resources. Examples of these controls include:

Access control software.
Antivirus software.
Library control systems.
Passwords.
Smart cards.
Encryption.
Dial-up access control and callback systems.

Preventive Physical Controls
Preventive physical controls are employed to prevent unauthorized personnel from entering computing facilities (i.e., locations housing computing resources, supporting utilities, computer hard copy, and input data media) and to help protect against natural disasters. Examples of these controls include:
Backup files and documentation.
Fences.
Security guards.
Badge systems.
Double door systems.
Locks and keys.
Backup power.
Biometric access controls.
Site selection.
Fire extinguishers.

Preventive Administrative Controls
Preventive administrative controls are personnel-oriented techniques for controlling people's behavior to ensure the confidentiality, integrity, and availability of computing data and programs. Examples of preventive administrative controls include:
Security awareness and technical training.
Separation of duties.
Procedures for recruiting and terminating employees.

Security policies and procedures.
Supervision.
Disaster recovery, contingency, and emergency plans.
User registration for computer access.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.

QUESTION 106
Access control is the collection of mechanisms that permits managers of a system to exercise a directing or restraining influence over the behavior, use, and content of a system. It does not permit management to:

A. specify what users can do
B. specify which resources they can access
C. specify how to restrain hackers
D. specify what operations they can perform on a system.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Access control is the collection of mechanisms that permits managers of a system to exercise a directing or restraining influence over the behavior, use, and content of a system. It permits management to specify what users can do, which resources they can access, and what operations they can perform on a system. Specifying HOW to restrain hackers is not directly linked to access control.
Source: DUPUIS, Clement, Access Control Systems and Methodology, Version 1, May 2002, CISSP Open Study Group Study Guide for Domain 1, Page 12.

QUESTION 107
Access Control techniques do not include which of the following choices?

A. Relevant Access Controls
B. Discretionary Access Control
C. Mandatory Access Control
D. Lattice Based Access Control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Access Control Techniques
Discretionary Access Control
Mandatory Access Control
Lattice Based Access Control
Rule-Based Access Control
Role-Based Access Control
Source: DUPUIS, Clement, Access Control Systems and Methodology, Version 1, May 2002, CISSP Open Study Group Study Guide for Domain 1, Page 13.

QUESTION 108
Access Control techniques do not include which of the following?

A. Rule-Based Access Controls
B. Role-Based Access Control
C. Mandatory Access Control
D. Random Number Based Access Control

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Access Control Techniques
Discretionary Access Control
Mandatory Access Control
Lattice Based Access Control
Rule-Based Access Control
Role-Based Access Control
Source: DUPUIS, Clement, Access Control Systems and Methodology, Version 1, May 2002, CISSP Open Study Group Study Guide for Domain 1, Page 13.

QUESTION 109
Which of the following statements relating to the Bell-LaPadula security model is FALSE (assuming the Strong Star property is not being used) ?

A. A subject is not allowed to read up.
B. The property restriction can be escaped by temporarily downgrading a high level subject.
C. A subject is not allowed to read down.
D. It is restricted to confidentiality.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
It is not a property of Bell LaPadula model.

The other answers are incorrect because:

A subject is not allowed to read up is a property of the 'simple security rule' of Bell LaPadula model.

The property restriction can be escaped by temporarily downgrading a high level subject can be escaped by temporarily downgrading a high level subject or by identifying a set of trusted objects which are permitted to violate the property as long as it is not in the middle of an operation.

It is restricted to confidentiality as it is a state machine model that enforces the confidentiality aspects of access control.
Reference: Shon Harris AIO v3 , Chapter-5 : Security Models and Architecture , Page:279-282

QUESTION 110
Which of the following logical access exposures INVOLVES CHANGING data before, or as it is entered into the computer?

A. Data diddling
B. Salami techniques
C. Trojan horses
D. Viruses

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
It involves changing data before , or as it is entered into the computer or in other words , it refers to the alteration of the existing data.

The other answers are incorrect because :

Salami techniques : A salami attack is the one in which an attacker commits several small crimes with the hope that the overall larger crime will go unnoticed.

Trojan horses: A Trojan Horse is a program that is disguised as another program.
Viruses:A Virus is a small application , or a string of code , that infects applications.

Reference: Shon Harris , AIO v3

Chapter - 11: Application and System Development, Page : 875-880
Chapter - 10: Law, Investigation and Ethics , Page : 758-759

QUESTION 111
When a biometric system is used, which error type deals with the possibility of GRANTING access to impostors who should be REJECTED?

A. Type I error
B. Type II error
C. Type III error
D. Crossover error

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
When the biometric system accepts impostors who should have been rejected , it is called a Type II error or False Acceptance Rate or False Accept Rate.

Biometrics verifies an individual's identity by analyzing a unique personal attribute or behavior, which is one of the most effective and accurate methods of verifying identification.

Biometrics is a very sophisticated technology; thus, it is much more expensive and complex than the other types of identity verification processes. A biometric system can make authentication decisions based on an individual's behavior, as in signature dynamics, but these can change over time and possibly be forged.

Biometric systems that base authentication decisions on physical attributes (iris, retina, fingerprint) provide more accuracy, because physical attributes typically don't change much, absent some disfiguring injury, and are harder to impersonate.

When a biometric system rejects an authorized individual, it is called a Type I error (False Rejection Rate (FRR) or False Reject Rate (FRR)).

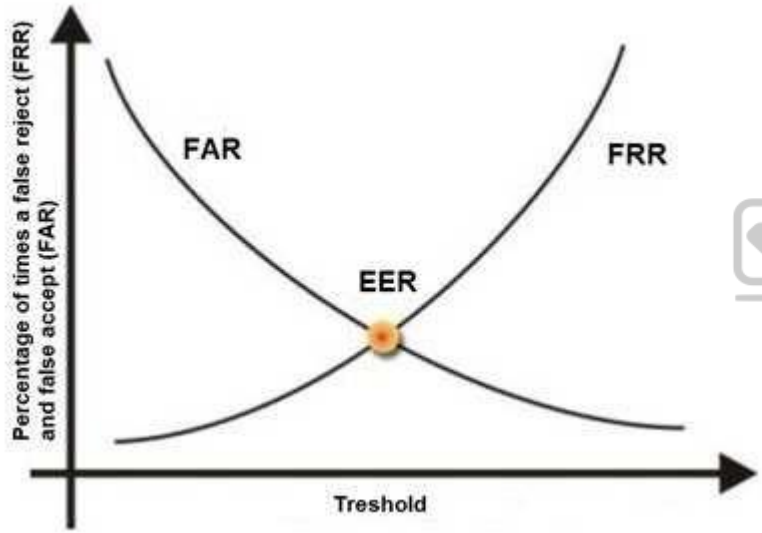
When the system accepts impostors who should be rejected, it is called a Type II error (False Acceptance Rate (FAR) or False Accept Rate (FAR)). Type II errors are the most dangerous and thus the most important to avoid.

The goal is to obtain low numbers for each type of error, but When comparing different biometric systems, many different variables are used, but one of the most important metrics is the crossover error rate (CER).

The accuracy of any biometric method is measured in terms of Failed Acceptance Rate (FAR) and Failed Rejection Rate (FRR). Both are expressed as percentages. The FAR is the rate at which attempts by unauthorized users are incorrectly accepted as valid. The FRR is just the opposite. It measures the rate at which authorized users are denied access.

The relationship between FRR (Type I) and FAR (Type II) is depicted in the graphic below . As one rate increases, the other decreases. The Cross-over Error Rate (CER) is sometimes considered a good indicator of the overall accuracy of a biometric system. This is the point at which the FRR and the FAR have the same value. Solutions with a lower CER are typically more accurate.

See graphic below from Biometria showing this relationship. The Cross-over Error Rate (CER) is also called the Equal Error Rate (EER), the two are synonymous.



Cross Over Error Rate

The other answers are incorrect:

Type I error is also called as False Rejection Rate where a valid user is rejected by the system.
Type III error : there is no such error type in biometric system.

Crossover error rate stated in percentage , represents the point at which false rejection equals the false acceptance rate.

Reference(s) used for this question:

http://www.biometria.sk/en/principles-of-biometrics.html
and
Shon Harris, CISSP All In One (AIO), 6th Edition , Chapter 3, Access Control, Page 188-189
and
Tech Republic, Reduce Multi_Factor Authentication Cost

QUESTION 112
Which of the following is the FIRST step in protecting data's confidentiality?

A. Install a firewall

B. Implement encryption
C. Identify which information is sensitive
D. Review all user access rights

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
In order to protect the confidentiality of the data.

The following answers are incorrect because :

Install a firewall is incorrect as this would come after the information has been identified for sensitivity levels.

Implement encryption is also incorrect as this is one of the mechanisms to protect the data once it has been identified.

Review all user access rights is also incorrect as this is also a protection mechanism for the identified information.

Reference : Shon Harris AIO v3 , Chapter-4 : Access Control , Page : 126

QUESTION 113
Which of the following best ensures accountability of users for the actions taken within a system or domain?

A. Identification
B. Authentication
C. Authorization

D. Credentials

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Details:

The only way to ensure accountability is if the subject is uniquely identified and authenticated. Identification alone does not provide proof the user is who they claim to be. After showing proper credentials, a user is authorized access to resources.

References:
HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 4: Access Control (page 126).

QUESTION 114
Which of the following statements pertaining to biometrics is FALSE?

A. User can be authenticated based on behavior.
B. User can be authenticated based on unique physical attributes.
C. User can be authenticated by what he knows.
D. A biometric system's accuracy is determined by its crossover error rate (CER).

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
As this is not a characteristic of Biometrics this is the rigth choice for this question. This is one of the three basic way authentication can be performed and it is not related to Biometrics. Example of something you know would be a password or PIN for example.

Please make a note of the negative 'FALSE' within the question. This question may seem tricky to some of you but you would be amazed at how many people cannot deal with negative questions. There will be a few negative questions within the real exam, just like this one the keyword NOT or FALSE will be in Uppercase to clearly indicate that it is negative.

Biometrics verifies an individual’s identity by analyzing a unique personal attribute or behavior, which is one of the most effective and accurate methods of performing authentication (one to one matching) or identification (a one to many matching).

A biometric system scans an attribute or behavior of a person and compares it to a template store within an authentication server datbase, such template would be created in an earlier enrollment process. Because this system inspects the grooves of a person's fingerprint, the pattern of someone's retina, or the pitches of someone's voice, it has to be extremely sensitive.

The system must perform accurate and repeatable measurements of anatomical or physiological characteristics. This type of sensitivity can easily cause false positives or false negatives. The system must be calibrated so that these false positives and false negatives occur infrequently and the results are as accurate as possible.

There are two types of failures in biometric identification:

False Rejection also called False Rejection Rate (FRR) — The system fail to recognize a legitimate user. While it could be argued that this has the effect of keeping the protected area extra secure, it is an intolerable frustration to legitimate users who are refused access because the scanner does not recognize them.

False Acceptance or False Acceptance Rate (FAR) — This is an erroneous recognition, either by confusing one user with another or by accepting an imposter as a legitimate user.

Physiological Examples:

Unique Physical Attributes:

- Fingerprint (Most commonly accepted)
- Hand Geometry
- Retina Scan (Most accurate but most intrusive)
- Iris Scan
- Vascular Scan

Behavioral Examples:

- Repeated Actions
  - Keystroke Dynamics
  - (Dwell time (the time a key is pressed) and Flight time (the time between "key up" and the next "key down").
- Signature Dynamics
  - (Stroke and pressure points)

EXAM TIP:
Retina scan devices are the most accurate but also the most invasive biometrics system available today. The continuity of the retinal pattern throughout life and the difficulty in fooling such a device also make it a great long-term, high-security option. Unfortunately, the cost of the proprietary hardware as well the stigma of users thinking it is potentially harmful to the eye makes retinal scanning a bad fit for most situations.

Remember for the exam that fingerprints are the most commonly accepted type of biometrics system.

The other answers are incorrect:
'Users can be authenticated based on behavior.' is incorrect as this choice is TRUE as it pertains to BIOMETRICS.
Biometrics systems makes use of unique physical characteristics or behavior of users.

'User can be authenticated based on unique physical attributes.' is also incorrect as this choice is also TRUE as it pertains to BIOMETRICS. Biometrics systems makes use of unique physical characteristics or behavior of users.

'A biometric system's accuracy is determined by its crossover error rate (CER)' is also incorrect as this is TRUE as it also pertains to BIOMETRICS. The CER is the point at which the false rejection rates and the false acceptance rates are equal. The smaller the value of the CER, the more accurate the system.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 25353-25356). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 25297-25303). Auerbach Publications. Kindle Edition.

QUESTION 115
Which of the following biometric devices offers the LOWEST CER?

A. Keystroke dynamics
B. Voice verification
C. Iris scan
D. Fingerprint

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
From most effective (lowest CER) to least effective (highest CER) are:
Iris scan, fingerprint, voice verification, keystroke dynamics.
Reference : Shon Harris Aio v3 , Chapter-4 : Access Control , Page : 131
Also see: http://www.sans.org/reading_room/whitepapers/authentication/biometric-selection-body-parts-online_139

QUESTION 116
Which of the following is the LEAST user accepted biometric device?

A. Fingerprint
B. Iris scan
C. Retina scan
D. Voice verification

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The biometric device that is least user accepted is the retina scan, where a system scans the blood-vessel pattern on the backside of the eyeball. When using this device, an individual has to place their eye up to a device, and may require a puff of air to be blown into the eye. The iris scan only needs for an individual to glance at a camera that could be placed above a door.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 4: Access Control (page 131).

QUESTION 117
Which of the following is the WEAKEST authentication mechanism?

A. Passphrases
B. Passwords
C. One-time passwords
D. Token devices

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Most of the time users usually choose passwords which can be guessed , hence passwords is the BEST answer out of the choices listed above.

The following answers are incorrect because :

Passphrases is incorrect as it is more secure than a password because it is longer.

One-time passwords is incorrect as the name states , it is good for only once and cannot be reused.
Token devices is incorrect as this is also a password generator and is an one time password mechanism.

Reference : Shon Harris AIO v3 , Chapter-4 : Access Control , Page : 139 , 142.

QUESTION 118
Which of the following statements pertaining to access control is false?

A. Users should only access data on a need-to-know basis.
B. If access is not explicitly denied, it should be implicitly allowed.
C. Access rights should be granted based on the level of trust a company has on a subject.
D. Roles can be an efficient way to assign rights to a type of user who performs certain tasks.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Access control mechanisms should default to no access to provide the necessary level of security and ensure that no security holes go unnoticed. If access is not explicitly allowed, it should be implicitly denied.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 4: Access Control (page 143).

QUESTION 119
Which of the following is NOT part of the Kerberos authentication protocol?

A. Symmetric key cryptography
B. Authentication service (AS)
C. Principals
D. Public Key

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
There is no such component within kerberos environment. Kerberos uses only symmetric encryption and does not make use of any public key component.

The other answers are incorrect because :

Symmetric key cryptography is a part of Kerberos as the KDC holds all the users' and services' secret keys.
Authentication service (AS) : KDC (Key Distribution Center) provides an authentication service

Principals : Key Distribution Center provides services to principals , which can be users , applications or network services.
References: Shon Harris , AIO v3 , Chapter - 4: Access Control , Pages : 152-155.

QUESTION 120
Which access control model enables the OWNER of the resource to specify what subjects can access specific resources based on their identity?

A. Discretionary Access Control
B. Mandatory Access Control
C. Sensitive Access Control
D. Role-based Access Control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Data owners decide who has access to resources based only on the identity of the person accessing the resource.

The following answers are incorrect :

Mandatory Access Control : users and data owners do not have as much freedom to determine who can access files. The operating system makes the final decision and can override the users' wishes and access decisions are based on security labels.

Sensitive Access Control : There is no such access control in the context of the above question.
Role-based Access Control : uses a centrally administered set of controls to determine how subjects and objects interact , also called as non discretionary access control.

In a mandatory access control (MAC) model, users and data owners do not have as much freedom to determine who can access files. The operating system makes the final decision and can override the users' wishes. This model is much more structured and strict and is based on a security label system. Users are given a security clearance (secret, top secret, confidential, and so on), and data is classified in the same way. The clearance and classification data is stored in the security labels, which are bound to the specific subjects and objects. When the system makes a decision about fulfilling a request to access an object, it is based on the clearance of the subject, the classification of the object, and the security policy of the system. The rules for how subjects access objects are made by the security officer, configured by the administrator, enforced by the operating system, and supported by security technologies Reference : Shon Harris , AIO v3 , Chapter-4 : Access Control , Page : 163-165

QUESTION 121
Which of the following access control models is based on sensitivity labels?

A. Discretionary access control

B. Mandatory access control
C. Rule-based access control
D. Role-based access control

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Access decisions are made based on the clearance of the subject and the sensitivity label of the object.

Example: Eve has a "Secret" security clearance and is able to access the "Mugwump Missile Design Profile" because its sensitivity label is "Secret." She is denied access to the "Presidential Toilet Tissue Formula" because its sensitivity label is "Top Secret."

The other answers are not correct because:

Discretionary Access Control is incorrect because in DAC access to data is determined by the data owner. For example, Joe owns the "Secret Chili Recipe" and grants read access to Charles.

Role Based Access Control is incorrect because in RBAC access decsions are made based on the role held by the user. For example, Jane has the role "Auditor" and that role includes read permission on the "System Audit Log."

Rule Based Access Control is incorrect because it is a form of MAC. A good example would be a Firewall where rules are defined and apply to anyone connecting through the firewall.

References:

All in One third edition, page 164.
Official ISC2 Guide page 187.

QUESTION 122
Which access control model is also called Non Discretionary Access Control (NDAC)?

A. Lattice based access control
B. Mandatory access control
C. Role-based access control
D. Label-based access control

Correct Answer: C

Section: Access Control
Explanation

Explanation/Reference:
RBAC is sometimes also called non-discretionary access control (NDAC) (as Ferraiolo says "to distinguish it from the policy-based specifics of MAC"). Another model that fits within the NDAC category is Rule-Based Access Control (RuBAC or RBAC). Most of the CISSP books use the same acronym for both models but NIST tend to use a lowercase "u" in between R and B to differentiate the two models.

You can certainly mimic MAC using RBAC but true MAC makes use of Labels which contains the sensitivity of the objects and the categories they belong to. No labels means MAC is not being used.

One of the most fundamental data access control decisions an organization must make is the amount of control it will give system and data owners to specify the level of access users of that data will have. In every organization there is a balancing point between the access controls enforced by organization and system policy and the ability for information owners to determine who can have access based on specific business requirements. The process of translating that balance into a workable access control model can be defined by three general access frameworks:

Discretionary access control
Mandatory access control
Nondiscretionary access control

A role-based access control (RBAC) model bases the access control authorizations on the roles (or functions) that the user is assigned within an organization. The determination of what roles have access to a resource can be governed by the owner of the data, as with DACs, or applied based on policy, as with MACs.

Access control decisions are based on job function, previously defined and governed by policy, and each role (job function) will have its own access capabilities. Objects associated with a role will inherit privileges assigned to that role. This is also true for groups of users, allowing administrators to simplify access control strategies by assigning users to groups and groups to roles.

There are several approaches to RBAC. As with many system controls, there are variations on how they can be applied within a computer system.

There are four basic RBAC architectures:

1. Non-RBAC: Non-RBAC is simply a user-granted access to data or an application by traditional mapping, such as with ACLs. There are no formal “roles” associated with the mappings, other than any identified by the particular user.

2. Limited RBAC: Limited RBAC is achieved when users are mapped to roles within a single application rather than through an organization-wide role structure. Users in a limited RBAC system are also able to access non-RBAC-based applications or data. For example, a user may be assigned to multiple roles within several applications and, in addition, have direct access to another application or system independent of his or her assigned role. The key attribute of limited RBAC is that the role for that user is defined within an application and not necessarily based on the user’s organizational job function.

3. Hybrid RBAC: Hybrid RBAC introduces the use of a role that is applied to multiple applications or systems based on a user's specific role within the organization. That role is then applied to applications or systems that subscribe to the organization's role-based model. However, as the term "hybrid" suggests, there are instances where the subject may also be assigned to roles defined solely within specific applications, complimenting (or, perhaps, contradicting) the larger, more encompassing organizational role used by other systems.

4. Full RBAC: Full RBAC systems are controlled by roles defined by the organization's policy and access control infrastructure and then applied to applications and systems across the enterprise. The applications, systems, and associated data apply permissions based on that enterprise definition, and not one defined by a specific application or system.

Be careful not to try to make MAC and DAC opposites of each other -- they are two different access control strategies with RBAC being a third strategy that was defined later to address some of the limitations of MAC and DAC.

The other answers are not correct because:

Mandatory access control is incorrect because though it is by definition not discretionary, it is not called "non-discretionary access control." MAC makes use of label to indicate the sensitivity of the object and it also makes use of categories to implement the need to know.

Label-based access control is incorrect because this is not a name for a type of access control but simply a bogus detractor.

Lattice based access control is not adequate either. A lattice is a series of levels and a subject will be granted an upper and lower bound within the series of levels. These levels could be sensitivity levels or they could be confidentiality levels or they could be integrity levels.

Reference(s) used for this question:

All in One, third edition, page 165.

Ferraiolo, D., Kuhn, D. & Chandramouli, R. (2003). Role-Based Access Control, p. 18.

Ferraiolo, D., Kuhn, D. (1992). Role-Based Access Controls. http://csrc.nist.gov/rbac/Role_Based_Access_Control-1992.html

Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Access Control ((ISC)2 Press) (Kindle Locations 1557-1584). Auerbach Publications. Kindle Edition.

Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Access Control ((ISC)2 Press) (Kindle Locations 1474-1477). Auerbach Publications. Kindle Edition.

QUESTION 123

Which access model is most appropriate for companies with a high employee turnover?

A. Role-based access control
B. Mandatory access control
C. Lattice-based access control
D. Discretionary access control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The underlying problem for a company with a lot of turnover is assuring that new employees are assigned the correct access permissions and that those permissions are removed when they leave the company.

Selecting the best answer requires one to think about the access control options in the context of a company with a lot of flux in the employee population. RBAC simplifies the task of assigning permissions because the permissions are assigned to roles which do not change based on who belongs to them. As employees join the company, it is simply a matter of assigning them to the appropriate roles and their permissions derive from their assigned role. They will implicitely inherit the permissions of the role or roles they have been assigned to. When they leave the company or change jobs, their role assignment is revoked/changed appropriately.

Mandatory access control is incorrect. While controlling access based on the clearence level of employees and the sensitivity of obects is a better choice than some of the other incorrect answers, it is not the best choice when RBAC is an option and you are looking for the best solution for a high number of employees constantly leaving or joining the company.

Lattice-based access control is incorrect. The lattice is really a mathematical concept that is used in formally modeling information flow (Bell-Lapadula, Biba, etc). In the context of the question, an abstract model of information flow is not an appropriate choice. CBK, pp. 324-325.

Discretionary access control is incorrect. When an employee joins or leaves the company, the object owner must grant or revoke access for that employee on all the objects they own. Problems would also arise when the owner of an object leaves the company. The complexity of assuring that the permissions are added and removed correctly makes this the least desirable solution in this situation.

References

Alll in One, third edition page 165
RBAC is discussed on pp. 189 through 191 of the ISC(2) guide.

QUESTION 124
What can be defined as a list of subjects along with their access rights that are authorized to access a specific object?

A. A capability table
B. An access control list
C. An access control matrix
D. A role-based matrix

Correct Answer: B

Section: Access Control
Explanation

Explanation/Reference:
"It [ACL] specifies a list of users [subjects] who are allowed access to each object" CBK, p. 188

A capability table is incorrect. "Capability tables are used to track, manage and apply controls based on the object and rights, or capabilities of a subject. For example, a table identifies the object, specifies access rights allowed for a subject, and permits access based on the user's posession of a capability (or ticket) for the object." CBK, pp. 191-192. The distinction that makes this an incorrect choice is that access is based on posession of a capability by the subject.

To put it another way, as noted in AIO3 on p. 169, "A capabiltiy table is different from an ACL because the subject is bound to the capability table, whereas the object is bound to the ACL."

An access control matrix is incorrect. The access control matrix is a way of describing the rules for an access control strategy. The matrix lists the users, groups and roles down the left side and the resources and functions across the top. The cells of the matrix can either indicate that access is allowed or indicate the type of access. CBK pp 317 - 318.

AIO3, p. 169 describes it as a table if subjects and objects specifying the access rights a certain subject possesses pertaining to specific objects.

In either case, the matrix is a way of analyzing the access control needed by a population of subjects to a population of objects. This access control can be applied using rules, ACL's, capability tables, etc.

A role-based matrix is incorrect. Again, a matrix of roles vs objects could be used as a tool for thinking about the access control to be applied to a set of objects. The results of the analysis could then be implemented using RBAC.

References:

CBK, Domain 2: Access Control.
AIO3, Chapter 4: Access Control

QUESTION 125
What is the difference between Access Control Lists (ACLs) and Capability Tables?

A. Access control lists are related/attached to a subject whereas capability tables are related/attached to an object.

B. Access control lists are related/attached to an object whereas capability tables are related/attached to a subject.
C. Capability tables are used for objects whereas access control lists are used for users.
D. They are basically the same.

Correct Answer: B

Section: Access Control
Explanation

Explanation/Reference:
Capability tables are used to track, manage and apply controls based on the object and rights, or capabilities of a subject. For example, a table identifies the object, specifies access rights allowed for a subject, and permits access based on the user's posession of a capability (or ticket) for the object. It is a row within the matrix.

To put it another way, A capabiltiy table is different from an ACL because the subject is bound to the capability table, whereas the object is bound to the ACL.

CLEMENT NOTE:

If we wish to express this very simply:

Capabilities are attached to a subject and it describe what access the subject has to each of the objects on the row that matches with the subject within the matrix. It is a row within the matrix.
ACL's are attached to objects, it describe who has access to the object and what type of access they have. It is a column within the matrix.

The following are incorrect answers:

"Access control lists are subject-based whereas capability tables are object-based" is incorrect.
"Capability tables are used for objects whereas access control lists are used for users" is incorrect.

"They are basically the same" is incorrect.
References used for this question:

CBK, pp. 191 - 192
AIO3 p. 169

QUESTION 126
What can be defined as a table of subjects and objects indicating what actions individual subjects can take upon individual objects?

A. A capacity table
B. An access control list
C. An access control matrix
D. A capability table

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The matrix lists the users, groups and roles down the left side and the resources and functions across the top. The cells of the matrix can either indicate that access is allowed or indicate the type of access. CBK pp 317 - 318.

AIO3, p. 169 describes it as a table if subjects and objects specifying the access rights a certain subject possesses pertaining to specific objects.
In either case, the matrix is a way of analyzing the access control needed by a population of subjects to a population of objects. This access control can be applied using rules, ACL's, capability tables, etc.

"A capacity table" is incorrect.

This answer is a trap for the unwary -- it sounds a little like "capability table" but is just there to distract you.

"An access control list" is incorrect.

"It [ACL] specifies a list of users [subjects] who are allowed access to each object" CBK, p. 188 Access control lists (ACL) could be used to implement the rules identified by an access control matrix but is different from the matrix itself.

"A capability table" is incorrect.

"Capability tables are used to track, manage and apply controls based on the object and rights, or capabilities of a subject. For example, a table identifies the object, specifies access rights allowed for a subject, and permits access based on the user's posession of a capability (or ticket) for the object." CBK, pp. 191-192.
To put it another way, as noted in AIO3 on p. 169, "A capabiltiy table is different from an ACL because the subject is bound to the capability table, whereas the object is bound to the ACL."

Again, a capability table could be used to implement the rules identified by an access control matrix but is different from the matrix itself.

References:

CBK pp. 191-192, 317-318

AIO3, p. 169

QUESTION 127
Which access control model is best suited in an environment where a high security level is required and where it is desired that only the administrator grants access control?

A. DAC
B. MAC
C. Access control matrix
D. TACACS

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
MAC provides high security by regulating access based on the clearance of individual users and sensitivity labels for each object. Clearance levels and sensitivity levels cannot be modified by individual users -- for example, user Joe (SECRET clearance) cannot reclassify the "Presidential Doughnut Recipe" from "SECRET" to "CONFIDENTIAL" so that his friend Jane (CONFIDENTIAL clearance) can read it. The administrator is ultimately responsible for configuring this protection in accordance with security policy and directives from the Data Owner.

DAC is incorrect. In DAC, the data owner is responsible for controlling access to the object.

Access control matrix is incorrect. The access control matrix is a way of thinking about the access control needed by a population of subjects to a population of objects. This access control can be applied using rules, ACL's, capability tables, etc.

TACACS is incorrect. TACACS is a tool for performing user authentication.

References:
CBK, p. 187, Domain 2: Access Control.
AIO3, Chapter 4, Access Control.

QUESTION 128
Which access control model provides upper and lower bounds of access capabilities for a subject?

A. Role-based access control
B. Lattice-based access control
C. Biba access control

D. Content-dependent access control

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
In the lattice model, users are assigned security clearences and the data is classified. Access decisions are made based on the clearence of the user and the classification of the object. Lattice-based access control is an essential ingredient of formal security models such as Bell-LaPadula, Biba, Chinese Wall, etc.

The bounds concept comes from the formal definition of a lattice as a "partially ordered set for which every pair of elements has a greatest lower bound and a least upper bound." To see the application, consider a file classified as "SECRET" and a user Joe with a security clearence of "TOP SECRET." Under Bell-LaPadula, Joe's "least upper bound" access to the file is "READ" and his least lower bound is "NO WRITE" (star property).

Role-based access control is incorrect. Under RBAC, the access is controlled by the permissions assigned to a role and the specific role assigned to the user.

Biba access control is incorrect. The Biba integrity model is based on a lattice structure but the context of the question disqualiifes it as the best answer.

Content-dependent access control is incorrect. In content dependent access control, the actual content of the information determines access as enforced by the arbiter.

References:

CBK, pp. 324-325.
AIO3, pp. 291-293. See aprticularly Figure 5-19 on p. 293 for an illustration of bounds in action.

QUESTION 129
How are memory cards and smart cards different?

A. Memory cards normally hold more memory than smart cards
B. Smart cards provide a two-factor authentication whereas memory cards don't
C. Memory cards have no processing power
D. Only smart cards can be used for ATM cards

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:

The main difference between memory cards and smart cards is their capacity to process information. A memory card holds information but cannot process information. A smart card holds information and has the necessary hardware and software to actually process that information.

A memory card holds a user's authentication information, so that this user needs only type in a user ID or PIN and presents the memory card to the system. If the entered information and the stored information match and are approved by an authentication service, the user is successfully authenticated.

A common example of a memory card is a swipe card used to provide entry to a building. The user enters a PIN and swipes the memory card through a card reader. If this is the correct combination, the reader flashes green and the individual can open the door and enter the building.

Memory cards can also be used with computers, but they require a reader to process the information. The reader adds cost to the process, especially when one is needed for every computer. Additionally, the overhead of PIN and card generation adds additional overhead and complexity to the whole authentication process. However, a memory card provides a more secure authentication method than using only a password because the attacker would need to obtain the card and know the correct PIN.

Administrators and management need to weigh the costs and benefits of a memory card implementation as well as the security needs of the organization to determine if it is the right authentication mechanism for their environment.

One of the most prevalent weaknesses of memory cards is that data stored on the card are not protected. Unencrypted data on the card (or stored on the magnetic strip) can be extracted or copied. Unlike a smart card, where security controls and logic are embedded in the integrated circuit, memory cards do not employ an inherent mechanism to protect the data from exposure.
Very little trust can be associated with confidentiality and integrity of information on the memory cards.

The following answers are incorrect:

"Smart cards provide two-factor authentication whereas memory cards don't" is incorrect. This is not necessarily true. A memory card can be combined with a pin or password to offer two factors authentication where something you have and something you know are used for factors.

"Memory cards normally hold more memory than smart cards" is incorrect. While a memory card may or may not have more memory than a smart card, this is certainly not the best answer to the question.

"Only smart cards can be used for ATM cards" is incorrect. This depends on the decisions made by the particular institution and is not the best answer to the question.

Reference(s) used for this question:

Shon Harris, CISSP All In One, 6th edition , Access Control, Page 199 and also for people using the Kindle edition of the book you can look at Locations 46474650.
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Access Control ((ISC)2 Press) (Kindle Locations 2124-2139). Auerbach Publications. Kindle Edition.

QUESTION 130
Why do buffer overflows happen? What is the main cause?

A. Because buffers can only hold so much data
B. Because of improper parameter checking within the application
C. Because they are an easy weakness to exploit
D. Because of insufficient system memory

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Buffer Overflow attack takes advantage of improper parameter checking within the application. This is the classic form of buffer overflow and occurs because the programmer accepts whatever input the user supplies without checking to make sure that the length of the input is less than the size of the buffer in the program.

The buffer overflow problem is one of the oldest and most common problems in software development and programming, dating back to the introduction of interactive computing. It can result when a program fills up the assigned buffer of memory with more data than its buffer can hold. When the program begins to write beyond the end of the buffer, the program's execution path can be changed, or data can be written into areas used by the operating system itself. This can lead to the insertion of malicious code that can be used to gain administrative privileges on the program or system.

As explained by Gaurab, it can become very complex. At the time of input even if you are checking the length of the input, it has to be check against the buffer size. Consider a case where entry point of data is stored in Buffer1 of Application1 and then you copy it to Buffer2 within Application2 later on, if you are just checking the length of data against Buffer1, it will not ensure that it will not cause a buffer overflow in Buffer2 of Application2.

A bit of reassurance from the ISC2 book about level of Coding Knowledge needed for the exam:
It should be noted that the CISSP is not required to be an expert programmer or know the inner workings of developing application software code, like the FORTRAN programming language, or how to develop Web applet code using Java. It is not even necessary that the CISSP know detailed security-specific coding practices such as the major divisions of buffer overflow exploits or the reason for preferring str(n)cpy to strcpy in the C language (although all such knowledge is, of course, helpful). Because the CISSP may be the person responsible for ensuring that security is included in such developments, the CISSP should know the basic procedures and concepts involved during the design and development of software programming. That is, in order for the CISSP to monitor the software development process and verify that security is included, the CISSP must understand the fundamental concepts of programming developments and the security strengths and weaknesses of various application development processes.

The following are incorrect answers:
"Because buffers can only hold so much data" is incorrect. This is certainly true but is not the best answer because the finite size of the buffer is not the problem - the problem is that the programmer did not check the size of the input before moving it into the buffer.

"Because they are an easy weakness to exploit" is incorrect. This answer is sometimes true but is not the best answer because the root cause of the buffer overflow is that the programmer did not check the size of the user input.

"Because of insufficient system memory" is incorrect. This is irrelevant to the occurrence of a buffer overflow.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 13319-13323). Auerbach Publications. Kindle Edition.

QUESTION 131
What is the main focus of the Bell-LaPadula security model?

A. Accountability
B. Integrity
C. Confidentiality
D. Availability

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The Bell-LaPadula model is a formal model dealing with confidentiality.

The Bell–LaPadula Model (abbreviated BLP) is a state machine model used for enforcing access control in government and military applications. It was developed by David Elliott Bell and Leonard J. LaPadula, subsequent to strong guidance from Roger R. Schell to formalize the U.S. Department of Defense (DoD) multilevel security (MLS) policy. The model is a formal state transition model of computer security policy that describes a set of access control rules which use security labels on objects and clearances for subjects. Security labels range from the most sensitive (e.g."Top Secret"), down to the least sensitive (e.g., "Unclassified" or "Public").

The Bell–LaPadula model focuses on data confidentiality and controlled access to classified information, in contrast to the Biba Integrity Model which describes rules for the protection of data integrity. In this formal model, the entities in an information system are divided into subjects and objects.

The notion of a "secure state" is defined, and it is proven that each state transition preserves security by moving from secure state to secure state, thereby inductively proving that the system satisfies the security objectives of the model. The Bell–LaPadula model is built on the concept of a state machine with a set of allowable states in a computer network system. The transition from one state to another state is defined by transition functions.

A system state is defined to be "secure" if the only permitted access modes of subjects to objects are in accordance with a security policy. To determine whether a specific access mode is allowed, the clearance of a subject is compared to the classification of the object (more precisely, to the combination of classification and set of compartments, making up the security level) to determine if the subject is authorized for the specific access mode.

The clearance/classification scheme is expressed in terms of a lattice. The model defines two mandatory access control (MAC) rules and one discretionary access control (DAC) rule with three security properties:

The Simple Security Property - a subject at a given security level may not read an object at a higher security level (no read-up).

The -property (read "star"-property) - a subject at a given security level must not write to any object at a lower security level (no write-down). The -property is also known as the Confinement property.

The Discretionary Security Property - use of an access matrix to specify the discretionary access control.

The following are incorrect answers:

Accountability is incorrect. Accountability requires that actions be traceable to the user that performed them and is not addressed by the Bell-LaPadula model.

Integrity is incorrect. Integrity is addressed in the Biba model rather than Bell-Lapadula.
Availability is incorrect. Availability is concerned with assuring that data/services are available to authorized users as specified in service level objectives and is not addressed by the Bell-Lapadula model.

References:

CBK, pp. 325-326
AIO3, pp. 279 - 284
AIOv4 Security Architecture and Design (pages 333 - 336)
AIOv5 Security Architecture and Design (pages 336 - 338)

Wikipedia at https://en.wikipedia.org/wiki/Bell-La_Padula_model

QUESTION 132
Which of the following statements pertaining to the Bell-LaPadula is TRUE if you are NOT making use of the strong star property?

A. It allows "read up."
B. It addresses covert channels.
C. It addresses management of access controls.
D. It allows "write up."

Correct Answer: D

Section: Access Control
Explanation

Explanation/Reference:
Bell–LaPadula Confidentiality Model10 The Bell–LaPadula model is perhaps the most well-known and significant security model, in addition to being one of the oldest models used in the creation of modern secure computing systems. Like the Trusted Computer System Evaluation Criteria (or TCSEC), it was inspired by early U.S. Department of Defense security policies and the need to prove that confidentiality could be maintained. In other words, its primary goal is to prevent disclosure as the model system moves from one state (one point in time) to another.

When the strong star property is not being used it means that both the property and the Simple Security Property rules would be applied.

The Star (*) property rule of the Bell-LaPadula model says that subjects cannot write down, this would compromise the confidentiality of the information if someone at the secret layer would write the object down to a confidential container for example.

The Simple Security Property rule states that the subject cannot read up which means that a subject at the secret layer would not be able to access objects at Top Secret for example.

You must remember: The model tells you about are NOT allowed to do. Anything else would be allowed. For example within the Bell LaPadula model you would be allowed to write up as it does not compromise the security of the information. In fact it would upgrade it to the point that you could lock yourself out of your own information if you have only a secret security clearance.

The following are incorrect answers because they are all FALSE:

"It allows read up" is incorrect. The "simple security" property forbids read up.
"It addresses covert channels" is incorrect. Covert channels are not addressed by the Bell-LaPadula model.
"It addresses management of access controls" is incorrect. Management of access controls are beyond the scope of the Bell-LaPadula model.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17595-17600). Auerbach Publications. Kindle Edition.

QUESTION 133
Which security model introduces access to objects only through programs?

A. The Biba model
B. The Bell-LaPadula model
C. The Clark-Wilson model
D. The information flow model

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
In the Clark-Wilson model, the subject no longer has direct access to objects but instead must access them through programs (well -formed transactions).
The Clark–Wilson integrity model provides a foundation for specifying and analyzing an integrity policy for a computing system.

The model is primarily concerned with formalizing the notion of information integrity. Information integrity is maintained by preventing corruption of data items in a system due to either error or malicious intent. An integrity policy describes how the data items in the system should be kept valid from one state of the system to the next and specifies the capabilities of various principals in the system. The model defines enforcement rules and certification rules.

Clark–Wilson is more clearly applicable to business and industry processes in which the integrity of the information content is paramount at any level of classification.

Integrity goals of Clark–Wilson model:

Prevent unauthorized users from making modification (Only this one is addressed by the Biba model).
Separation of duties prevents authorized users from making improper modifications.
Well formed transactions: maintain internal and external consistency i.e. it is a series of operations that are carried out to transfer the data from one consistent state to the other.

The following are incorrect answers:

The Biba model is incorrect. The Biba model is concerned with integrity and controls access to objects based on a comparison of the security level of the subject to that of the object.

The Bell-LaPdaula model is incorrect. The Bell-LaPaula model is concerned with confidentiality and controls access to objects based on a comparison of the clearence level of the subject to the classification level of the object.

The information flow model is incorrect. The information flow model uses a lattice where objects are labelled with security classes and information can flow either upward or at the same level. It is similar in framework to the Bell-LaPadula model.

References:

ISC2 Official Study Guide, Pages 325 - 327
AIO3, pp. 284 - 287
AIOv4 Security Architecture and Design (pages 338 - 342)
AIOv5 Security Architecture and Design (pages 341 - 344)

Wikipedia at: https://en.wikipedia.org/wiki/Clark-Wilson_model

QUESTION 134
Which security model ensures that actions that take place at a higher security level do not affect actions that take place at a lower level?

A. The Bell-LaPadula model
B. The information flow model
C. The noninterference model
D. The Clark-Wilson model

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The goal of a noninterference model is to strictly separate differing security levels to assure that higher-level actions do not determine what lower-level users can see. This is in contrast to other security models that control information flows between differing levels of users, By maintaining strict separation of security levels, a noninterference model minimizes leakages that might happen through a covert channel.

The model ensures that any actions that take place at a higher security level do not affect, or interfere with, actions that take place at a lower level.
It is not concerned with the flow of data, but rather with what a subject knows about the state of the system. So if an entity at a higher security level performs an action, it can not change the state for the entity at the lower level.
The model also addresses the inference attack that occurs when some one has access to some type of information and can infer(guess) something that he does not have the clearance level or authority to know.

The following are incorrect answers:

The Bell-LaPadula model is incorrect. The Bell-LaPadula model is concerned only with confidentiality and bases access control decisions on the classfication of objects and the clearences of subjects.

The information flow model is incorrect. The information flow models have a similar framework to the Bell-LaPadula model and control how information may flow between objects based on security classes. Information will be allowed to flow only in accordance with the security policy.

The Clark-Wilson model is incorrect. The Clark-Wilson model is concerned with change control and assuring that all modifications to objects preserve integrity by means of well-formed transactions and usage of an access triple (subjet - interface - object).

References:

CBK, pp 325 - 326
AIO3, pp. 290 - 291
AIOv4 Security Architecture and Design (page 345) AIOv5 Security Architecture and Design (pages 347 - 348)
https://en.wikibooks.org/wiki/Security_Architecture_and_Design/Security_Models#Noninterference_Models

QUESTION 135
Which of the following security models does NOT concern itself with the flow of data?

A. The information flow model
B. The Biba model
C. The Bell-LaPadula model
D. The noninterference model

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The goal of a noninterference model is to strictly separate differing security levels to assure that higher-level actions do not determine what lower-level users can see. This is in contrast to other security models that control information flows between differing levels of users, By maintaining strict separation of security levels, a noninterference model minimizes leakages that might happen through a covert channel.

The Bell-LaPadula model is incorrect. The Bell-LaPadula model is concerned with confidentiality and bases access control decsions on the classfication of objects and the clearences of subjects.

The information flow model is incorrect. The information flow models have a similar framework to the Bell-LaPadula model and control how information may flow between objects based on security classes.

The Biba model is incorrect. The Biba model is concerned with integrity and is a complement to the Bell-LaPadula model in that higher levels of integrity are more trusted than lower levels. Access control us based on these integrity levels to assure that read/write operations do not decrease an object's integrity.

References:

CBK, pp 325 - 326
AIO3, pp. 290 - 291

QUESTION 136

What Orange Book security rating is reserved for systems that have been evaluated but fail to meet the criteria and requirements of the higher divisions?

A. A
B. D
C. E
D. F

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
D or "minimal protection" is reserved for systems that were evaluated under the TCSEC but did not meet the requirements for a higher trust level.

A is incorrect. A or "Verified Protectection" is the highest trust level under the TCSEC.
E is incorrect. The trust levels are A - D so "E" is not a valid trust level.
F is incorrect. The trust levels are A - D so "F" is not a valid trust level.

CBK, pp. 329 - 330
AIO3, pp. 302 - 306

QUESTION 137
Which division of the Orange Book deals with discretionary protection (need-to-know)?

A. D

B. C
C. B
D. A

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
C deals with discretionary protection. See matric below:

TNI/TCSEC MATRIX

	A1	B3	B2	B1	C2	C1
DISCRETIONARY ACCESS						
Discretionary Access Control						
Identification and Authentication						
System Integrity						
System Architecture						
Security Testing						
Security Features User's Guide Trusted Facility Manual Design Documentation Test Documentation						
CONTROLLED ACCESS						
Protect Audit Trails						
Object Reuse						
MANDATORY ACCESS CONTROL						
Labels						
Mandatory Access Control						
Process isolation in system architecture						
Design Specification & Verification						
Device labels						
Subject Sensitivity Labels						
Trusted Path						
Separation of Administrator and User functions						
Covert Channel Analysis (Only Covert Storage Channel at B2)						
Trusted Facility Management						
Configuration Management						
Trusted Recovery						
Covert Channel Analysis (Both Timing and Covert Channel analysis at B3)						
Security Administrator Role Defined						
Monitor events and notify security personnel						
Trusted Distribution						
Formal Methods						
	A1	B3	B2	B1	C2	C1

TCSEC Matric

The following are incorrect answers:

D is incorrect. D deals with minimal security.
B is incorrect. B deals with mandatory protection.
A is incorrect. A deals with verified protection.
Reference(s) used for this question:
CBK, p. 329 – 330

and
Shon Harris, CISSP All In One (AIO), 6th Edition , page 392-393

QUESTION 138
Which of the following are not Remote Access concerns?

A. Justification for remote access
B. Auditing of activities
C. Regular review of access privileges
D. Access badges

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Access badges are more relevant to physical security rather than remote access.

"Justification for remote access" is incorrect. Justification for remote access is a relevant concern.

"Auditing of activities" is incorrect. Auditing of activites is an imporant aspect to assure that malicious or unauthorized activities are not occuring.

"Regular review of access privileges" is incorrect. Regular review of remote accept privileges is an important management responsibility.

References:
AIO3, pp. 547 - 548

QUESTION 139
Smart cards are an example of which type of control?

A. Detective control

B. Administrative control
C. Technical control
D. Physical control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Logical or technical controls involve the restriction of access to systems and the protection of information. Smart cards and encryption are examples of these types of control.

Controls are put into place to reduce the risk an organization faces, and they come in three main flavors: administrative, technical, and physical. Administrative controls are commonly referred to as “soft controls” because they are more management-oriented. Examples of administrative controls are security documentation, risk management, personnel security, and training. Technical controls (also called logical controls) are software or hardware components, as in firewalls, IDS, encryption, identification and authentication mechanisms. And physical controls are items put into place to protect facility, personnel, and resources. Examples of physical controls are security guards, locks, fencing, and lighting.

Many types of technical controls enable a user to access a system and the resources within that system. A technical control may be a username and password combination, a Kerberos implementation, biometrics, public key infrastructure (PKI), RADIUS, TACACS +, or authentication using a smart card through a reader connected to a system. These technologies verify the user is who he says he is by using different types of authentication methods. Once a user is properly authenticated, he can be authorized and allowed access to network resources.

Reference(s) used for this question:

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 245). McGraw-Hill. Kindle Edition.
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 32).

QUESTION 140
What security model is dependent on security labels?

A. Discretionary access control
B. Label-based access control
C. Mandatory access control
D. Non-discretionary access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
With mandatory access control (MAC), the authorization of a subject's access to an object is dependant upon labels, which indicate the subject's clearance, and the classification or sensitivity of the object. Label-based access control is not defined.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).

QUESTION 141
What security model implies a central authority that define rules and sometimes global rules, dictating what subjects can have access to what objects?

A. Flow Model
B. Discretionary access control
C. Mandatory access control
D. Non-discretionary access control

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
As a security administrator you might configure user profiles so that users cannot change the system's time, alter system configuration files, access a command prompt, or install unapproved applications. This type of access control is referred to as nondiscretionary, meaning that access decisions are not made at the discretion of the user. Nondiscretionary access controls are put into place by an authoritative entity (usually a security administrator) with the goal of protecting the organization's most critical assets.

Non-discretionary access control is when a central authority determines what subjects can have access to what objects based on the organizational security policy.
Centralized access control is not an existing security model.
Both, Rule Based Access Control (RuBAC or RBAC) and Role Based Access Controls (RBAC) falls into this category.

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 221). McGraw-Hill. Kindle Edition.
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).

QUESTION 142
Which type of password token involves time synchronization?

A. Static password tokens

B. Synchronous dynamic password tokens
C. Asynchronous dynamic password tokens
D. Challenge-response tokens

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Synchronous dynamic password tokens generate a new unique password value at fixed time intervals, so the server and token need to be synchronized for the password to be accepted.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 37).
Also check out: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (page 136).

QUESTION 143
Which of the following statements pertaining to biometrics is false?

A. Increased system sensitivity can cause a higher false rejection rate
B. The crossover error rate is the point at which false rejection rate equals the false acceptance rate.
C. False acceptance rate is also known as Type II error.
D. Biometrics are based on the Type 2 authentication mechanism.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Authentication is based on three factor types: type 1 is something you know, type 2 is something you have and type 3 is something you are. Biometrics are based on the Type 3 authentication mechanism.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 37).

QUESTION 144
Which of the following statements pertaining to Kerberos is TRUE?

A. Kerberos does not address availability
B. Kerberos does not address integrity
C. Kerberos does not make use of Symmetric Keys
D. Kerberos cannot address confidentiality of information

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The question was asking for a TRUE statement and the only correct statement is "Kerberos does not address availability".

Kerberos addresses the confidentiality and integrity of information. It does not directly address availability.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 42).

QUESTION 145
Which of the following centralized access control mechanisms is the least appropriate for mobile workers accessing the corporate network over analog lines?

A. TACACS
B. Call-back
C. CHAP
D. RADIUS

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Call-back allows for a distant user connecting into a system to be called back at a number already listed in a database of trusted users. The disadvantage of this system is that the user must be at a fixed location whose phone number is known to the authentication server. Being mobile workers, users are accessing the system from multiple locations, making call-back inappropriate for them.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 44).

QUESTION 146
Which of the following is NOT a compensating measure for access violations?

A. Backups
B. Business continuity planning
C. Insurance
D. Security awareness

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Security awareness is a preventive measure, not a compensating measure for access violations.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 50).

QUESTION 147
Which of the following is most affected by denial-of-service (DOS) attacks?

A. Confidentiality
B. Integrity
C. Accountability
D. Availability

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Denial of service attacks obviously affect availability of targeted systems.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 61).

QUESTION 148
What refers to legitimate users accessing networked services that would normally be restricted to them?

A. Spoofing

B. Piggybacking
C. Eavesdropping
D. Logon abuse

Correct Answer: D
Section: Access Control
Explanation
Explanation/Reference:
Unauthorized access of restricted network services by the circumvention of security access controls is known as logon abuse. This type of abuse refers to users who may be internal to the network but access resources they would not normally be allowed.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 74).

QUESTION 149
In regards to information classification what is the main responsibility of information (data) owner?

A. determining the data sensitivity or classification level
B. running regular data backups
C. audit the data users
D. periodically check the validity and accuracy of the data

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Making the determination to decide what level of classification the information requires is the main responsibility of the data owner.

The data owner within classification is a person from Management who has been entrusted with a data set that belong to the company. It could be for example the
Chief Financial Officer (CFO) who has been entrusted with all financial date or it could be the Human Resource Director who has been entrusted with all Human Resource data. The information owner will decide what classification will be applied to the data based on Confidentiality, Integrity, Availability, Criticality, and Sensitivity of the data.

The Custodian is the technical person who will implement the proper classification on objects in accordance with the Data Owner. The custodian DOES NOT decide what classification to apply, it is the Data Owner who will dictate to the Custodian what is the classification to apply.

NOTE:

The term Data Owner is also used within Discretionary Access Control (DAC). Within DAC it means the person who has created an object. For example, if I create a file on my system then I am the owner of the file and I can decide who else could get access to the file. It is left to my discretion. Within DAC access is granted based solely on the Identity of the subject, this is why sometimes DAC is referred to as Identity Based Access Control. The other choices were not the best answer

Running regular backups is the responsibility of custodian.
Audit the data users is the responsibility of the auditors
Periodically check the validity and accuracy of the data is not one of the data owner responsibility

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 14, Chapter 1: Security Management Practices.

QUESTION 150
Which of the following is not a two-factor authentication mechanism?

A. Something you have and something you know.
B. Something you do and a password.
C. A smartcard and something you are.
D. Something you know and a password.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Something you know and a password fits within only one of the three ways authentication could be done. A password is an example of something you know, thereby something you know and a password does not constitute a two-factor authentication as both are in the same category of factors.

A two-factor (strong) authentication relies on two different kinds of authentication factors out of a list of three possible choice:

something you know (e.g. a PIN or password), something you have (e.g. a smart card, token, magnetic card), something you are is mostly Biometrics (e.g. a fingerprint) or something you do (e.g. signature dynamics).

TIP FROM CLEMENT:
On the real exam you can expect to see synonyms and sometimes sub-categories under the main categories. People are familiar with Pin, Passphrase, Password as subset of Something you know.

However, when people see choices such as Something you do or Something you are they immediately get confused and they do not think of them as subset of Biometrics where you have Biometric implementation based on behavior and physilogical attributes. So something you do falls under the Something you are category as a subset.

Something your do would be signing your name or typing text on your keyboard for example.

Strong authentication is simply when you make use of two factors that are within two different categories.

Reference(s) used for this question:
Shon Harris, CISSP All In One, Fifth Edition, pages 158-159

QUESTION 151
Which of the following access control models introduces user security clearance and data classification?

A. Role-based access control
B. Discretionary access control
C. Non-discretionary access control
D. Mandatory access control

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The mandatory access control model is based on a security label system. Users are given a security clearance and data is classified. The classification is stored in the security labels of the resources. Classification labels specify the level of trust a user must have to access a certain file.

Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 4: Access Control (Page 154).

QUESTION 152
Password management falls into which control category?

A. Compensating
B. Detective
C. Preventive
D. Technical

Correct Answer: C

Section: Access Control
Explanation

Explanation/Reference:
Password management is an example of preventive control.
Proper passwords prevent unauthorized users from accessing a system.

There are literally hundreds of different access approaches, control methods, and technologies, both in the physical world and in the virtual electronic world. Each method addresses a different type of access control or a specific access need.

For example, access control solutions may incorporate identification and authentication mechanisms, filters, rules, rights, logging and monitoring, policy, and a plethora of other controls. However, despite the diversity of access control methods, all access control systems can be categorized into seven primary categories.

The seven main categories of access control are:

1. Directive: Controls designed to specify acceptable rules of behavior within an organization
2. Deterrent: Controls designed to discourage people from violating security directives
3. Preventive: Controls implemented to prevent a security incident or information breach
4. Compensating: Controls implemented to substitute for the loss of primary controls and mitigate risk down to an acceptable level
5. Detective: Controls designed to signal a warning when a security control has been breached
6. Corrective: Controls implemented to remedy circumstance, mitigate damage, or restore controls
7. Recovery: Controls implemented to restore conditions to normal after a security incident

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1156-1176). Auerbach Publications. Kindle Edition.

QUESTION 153
Which of the following access control models requires security clearance for subjects?

A. Identity-based access control
B. Role-based access control
C. Discretionary access control
D. Mandatory access control

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
With mandatory access control (MAC), the authorization of a subject's access to an object is dependant upon labels, which indicate the subject's clearance. Identity-based access control is a type of discretionary access control. A role-based access control is a type of non-discretionary access control.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).

QUESTION 154
Which of the following access control models requires defining classification for objects?

A. Role-based access control
B. Discretionary access control
C. Identity-based access control
D. Mandatory access control

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
With mandatory access control (MAC), the authorization of a subject's access to an object is dependant upon labels, which indicate the subject's clearance, and classification of objects.

The Following answers were incorrect:

Identity-based Access Control is a type of Discretionary Access Control (DAC), they are synonymous.
Role Based Access Control (RBAC) and Rule Based Access Control (RuBAC or RBAC) are types of Non Discretionary Access Control (NDAC).

Tip:
When you have two answers that are synonymous they are not the right choice for sure.

There is only one access control model that makes use of Label, Clearances, and Categories, it is Mandatory Access Control, none of the other one makes use of those items.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).

QUESTION 155

In the context of access control, locks, gates, guards are examples of which of the following?

A. Administrative controls
B. Technical controls
C. Physical controls
D. Logical controls

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Administrative, technical and physical controls are categories of access control mechanisms.

Logical and Technical controls are synonymous. So both of them could be eliminated as possible choices.

Physical Controls: These are controls to protect the organization's people and physical environment, such as locks, gates, and guards. Physical controls may be called "operational controls" in some contexts.

Physical security covers a broad spectrum of controls to protect the physical assets (primarily the people) in an organization. Physical Controls are sometimes referred to as "operational" controls in some risk management frameworks. These controls range from doors, locks, and windows to environment controls, construction standards, and guards. Typically, physical security is based on the notion of establishing security zones or concentric areas within a facility that require increased security as you get closer to the valuable assets inside the facility. Security zones are the physical representation of the defense-in-depth principle discussed earlier in this chapter. Typically, security zones are associated with rooms, offices, floors, or smaller elements, such as a cabinet or storage locker. The design of the physical security controls within the facility must take into account the protection of the asset as well as the individuals working in that area.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1301-1303). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1312-1318). Auerbach Publications. Kindle Edition.

QUESTION 156
Which of the following statements pertaining to using Kerberos without any extension is false?

A. A client can be impersonated by password-guessing.
B. Kerberos is mostly a third-party authentication protocol.

C. Kerberos uses public key cryptography.
D. Kerberos provides robust authentication.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Kerberos is a trusted, credential-based, third-party authentication protocol that uses symmetric (secret) key cryptography to provide robust authentication to clients accessing services on a network.

Because a client's password is used in the initiation of the Kerberos request for the service protocol, password guessing can be used to impersonate a client.

Here is a nice overview of HOW Kerberos is implement as described in RFC 4556:

1. Introduction

The Kerberos V5 protocol [RFC4120] involves use of a trusted third party known as the Key Distribution Center (KDC) to negotiate shared session keys between clients and services and provide mutual authentication between them.

The corner-stones of Kerberos V5 are the Ticket and the Authenticator. A Ticket encapsulates a symmetric key (the ticket session key) in an envelope (a public message) intended for a specific service. The contents of the Ticket are encrypted with a symmetric key shared between the service principal and the issuing KDC. The encrypted part of the Ticket contains the client principal name, among other items. An Authenticator is a record that can be shown to have been recently generated using the ticket session key in the associated Ticket. The ticket session key is known by the client who requested the ticket. The contents of the Authenticator are encrypted with the associated ticket session key. The encrypted part of an Authenticator contains a timestamp and the client principal name, among other items.

As shown in Figure 1, below, the Kerberos V5 protocol consists of the following message exchanges between the client and the KDC, and the client and the application service:

The Authentication Service (AS) Exchange

The client obtains an "initial" ticket from the Kerberos authentication server (AS), typically a Ticket Granting Ticket (TGT). The AS-REQ message and the ASREP message are the request and the reply message, respectively, between the client and the AS.

The Ticket Granting Service (TGS) Exchange

The client subsequently uses the TGT to authenticate and request a service ticket for a particular service, from the Kerberos ticket-granting server (TGS). The TGS-REQ message and the TGS-REP message are the request and the reply message respectively between the client and the TGS.

The Client/Server Authentication Protocol (AP) Exchange

The client then makes a request with an AP-REQ message, consisting of a service ticket and an authenticator that certifies the client's possession of the ticket session key. The server may optionally reply with an AP-REP message. AP exchanges typically negotiate session-specific symmetric keys.

Usually, the AS and TGS are integrated in a single device also known as the KDC.

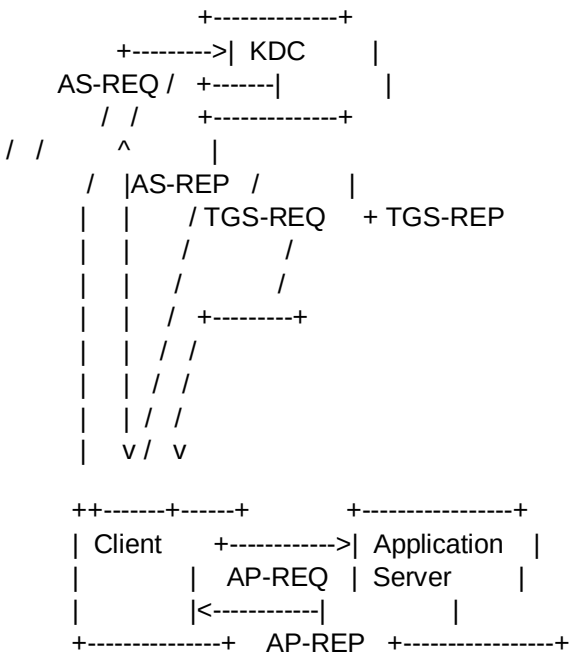


Figure 1: The Message Exchanges in the Kerberos V5 Protocol

In the AS exchange, the KDC reply contains the ticket session key, among other items, that is encrypted using a key (the AS reply key) shared between the client and the KDC. The AS reply key is typically derived from the client's password for human users. Therefore, for human users, the attack resistance strength of the Kerberos protocol is no stronger than the strength of their passwords.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 40). And
HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (pages 147-151).
and http://www.ietf.org/rfc/rfc4556.txt

QUESTION 157
Which of the following statements pertaining to Kerberos is false?

A. The Key Distribution Center represents a single point of failure.
B. Kerberos manages access permissions.
C. Kerberos uses a database to keep a copy of all users' public keys.
D. Kerberos uses symmetric key cryptography.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Kerberos is a trusted, credential-based, third-party authentication protocol that uses symmetric (secret) key cryptography to provide robust authentication to clients accessing services on a network.

One weakness of Kerberos is its Key Distribution Center (KDC), which represents a single point of failure.
The KDC contains a database that holds a copy of all of the symmetric/secret keys for the principals.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page40).

QUESTION 158
Which access control model would a lattice-based access control model be an example of?

A. Mandatory access control.
B. Discretionary access control.
C. Non-discretionary access control.
D. Rule-based access control.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
In a lattice model, there are pairs of elements that have the least upper bound of values and greatest lower bound of values. In a Mandatory Access Control (MAC) model, users and data owners do not have as much freedom to determine who can access files.

TIPS FROM CLEMENT

Mandatory Access Control is in place whenever you have permissions that are being imposed on the subject and the subject cannot arbitrarily change them. When the subject/owner of the file can change permissions at will, it is discretionary access control.

Here is a breakdown largely based on explanations provided by Doug Landoll. I am reproducing below using my own word and not exactly how Doug explained it:

FIRST: The Lattice
A lattice is simply an access control tool usually used to implement Mandatory Access Control (MAC) and it could also be used to implement RBAC but this is not as common. The lattice model can be used for Integrity level or file permissions as well. The lattice has a least upper bound and greatest lower bound. It makes use of pair of elements such as the subject security clearance pairing with the object sensitivity label.

SECOND: DAC (Discretionary Access Control)
Let's get into Discretionary Access Control: It is an access control method where the owner (read the creator of the object) will decide who has access at his own discretion. As we all know, users are sometimes insane. They will share their files with other users based on their identity but nothing prevent the user from further sharing it with other users on the network. Very quickly you loose control on the flow of information and who has access to what. It is used in small and friendly environment where a low level of security is all that is required.

THIRD: MAC (Mandatory Access Control)

All of the following are forms of Mandatory Access Control:
Mandatory Access control (MAC) (Implemented using the lattice)

You must remember that MAC makes use of Security Clearance for the subject and also Labels will be assigned to the objects. The clearance of the Subject must dominate (be equal or higher) the clearance of the Object being accessed. The label attached to the object will indicate the sensitivity leval and the categories the object belongs to. The categories are used to implement the Need to Know.

All of the following are forms of Non Discretionary Access Control:

Role Based Access Control (RBAC)
Rule Based Access Control (Think Firewall in this case)

The official ISC2 book says that RBAC (synonymous with Non Discretionary Access Control) is a form of DAC but they are simply wrong. RBAC is a form of Non Discretionary Access Control. Non Discretionary DOES NOT equal mandatory access control as there is no labels and clearance involved.

I hope this clarifies the whole drama related to what is what in the world of access control.

In the same line of taught, you should be familiar with the difference between Explicit permission (the user has his own profile) versus Implicit (the user inherit permissions by being a member of a role for example).

The following answers are incorrect:
Discretionary access control. Is incorrect because in a Discretionary Access Control (DAC) model, access is restricted based on the authorization granted to the users. It is identity based access control only. It does not make use of a lattice.

Non-discretionary access control. Is incorrect because Non-discretionary Access Control (NDAC) uses the role-based access control method to determine access rights and permissions. It is often times used as a synonym to RBAC which is Role Based Access Control. The user inherit permission from the role when they are assigned into the role. This type of access could make use of a lattice but could also be implemented without the use of a lattice in some case. Mandatory Access Control was a better choice than this one, but RBAC could also make use of a lattice. The BEST answer was MAC.

Rule-based access control. Is incorrect because it is an example of a Non-discretionary Access Control (NDAC) access control mode. You have rules that are globally applied to all users. There is no such thing as a lattice being use in Rule-Based Access Control.

References:

AIOv3 Access Control (pages 161 - 168)
AIOv3 Security Models and Architecture (pages 291 - 293)

QUESTION 159
Which of the following is an example of discretionary access control?

A. Identity-based access control
B. Task-based access control
C. Role-based access control
D. Rule-based access control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
An identity-based access control is an example of discretionary access control that is based on an individual's identity. Identity-based access control (IBAC) is access control based on the identity of the user (typically relayed as a characteristic of the process acting on behalf of that user) where access authorizations to specific objects are assigned based on user identity.

Rule Based Access Control (RuBAC) and Role Based Access Control (RBAC) are examples of non-discretionary access controls.

Rule-based access control is a type of non-discretionary access control because this access is determined by rules and the subject does not decide what those rules will be, the rules are uniformly applied to ALL of the users or subjects.

In general, all access control policies other than DAC are grouped in the category of non-discretionary access control (NDAC). As the name implies, policies in this category have rules that are not established at the discretion of the user. Non-discretionary policies establish controls that cannot be changed by users, but only through administrative action.

Both Role Based Access Control (RBAC) and Rule Based Access Control (RuBAC) fall within Non Discretionary Access Control (NDAC). If it is not DAC or MAC then it is most likely NDAC.

BELOW YOU HAVE A DESCRIPTION OF THE DIFFERENT CATEGORIES:

MAC = Mandatory Access Control

Under a mandatory access control environment, the system or security administrator will define what permissions subjects have on objects. The administrator does not dictate user's access but simply configure the proper level of access as dictated by the Data Owner.

The MAC system will look at the Security Clearance of the subject and compare it with the object sensitivity level or classification level. This is what is called the dominance relationship.
The subject must DOMINATE the object sensitivity level. Which means that the subject must have a security clearance equal or higher than the object he is attempting to access.

MAC also introduce the concept of labels. Every objects will have a label attached to them indicating the classification of the object as well as categories that are used to impose the need to know (NTK) principle. Even thou a user has a security clearance of Secret it does not mean he would be able to access any Secret documents within the system. He would be allowed to access only Secret document for which he has a Need To Know, formal approval, and object where the user belong to one of the categories attached to the object.

If there is no clearance and no labels then IT IS NOT Mandatory Access Control.

Many of the other models can mimic MAC but none of them have labels and a dominance relationship so they are NOT in the MAC category.

DAC = Discretionary Access Control

DAC is also known as: Identity Based access control system.

The owner of an object is define as the person who created the object. As such the owner has the discretion to grant access to other users on the network. Access will be granted based solely on the identity of those users.

Such system is good for low level of security. One of the major problem is the fact that a user who has access to someone's else file can further share the file with other users without the knowledge or permission of the owner of the file. Very quickly this could become the wild wild west as there is no control on the dissimination of the information.

RBAC = Role Based Access Control

RBAC is a form of Non-Discretionary access control.
Role Based access control usually maps directly with the different types of jobs performed by employees within a company.

For example there might be 5 security administrator within your company. Instead of creating each of their profile one by one, you would simply create a role and assign the administrators to the role. Once an administrator has been assigned to a role, he will IMPLICITLY inherit the permissions of that role.

RBAC is great tool for environment where there is a a large rotation of employees on a daily basis such as a very large help desk for example.

RBAC or RuBAC = Rule Based Access Control

RuBAC is a form of Non-Discretionary access control.

A good example of a Rule Based access control device would be a Firewall. A single set of rules is imposed to all users attempting to connect through the firewall.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.
and
NISTIR-7316 at http://csrc.nist.gov/publications/nistir/7316/NISTIR-7316.pdf
and
http://itlaw.wikia.com/wiki/Identity-based_access_control

QUESTION 160
Which of the following would be used to implement Mandatory Access Control (MAC)?

A. Clark-Wilson Access Control
B. Role-based access control
C. Lattice-based access control
D. User dictated access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The lattice is a mechanism use to implement Mandatory Access Control (MAC)

Under Mandatory Access Control (MAC) you have:
Mandatory Access Control

Under Non Discretionary Access Control (NDAC) you have:

Rule-Based Access Control
Role-Based Access Control

Under Discretionary Access Control (DAC) you have:
Discretionary Access Control

The Lattice Based Access Control is a type of access control used to implement other access control method. A lattice is an ordered list of elements that has a least upper bound and a most lower bound. The lattice can be used for MAC, DAC, Integrity level, File Permission, and more For example in the case of MAC, if we look at common government classifications, we have the following:

TOP SECRET
SECRET ----------I am the user at secret
CONFIDENTIAL
SENSITIVE BUT UNCLASSIFIED
UNCLASSIFIED

If you look at the diagram above where I am a user at SECRET it means that I can access document at lower classification but not document at TOP SECRET. The lattice is a list of ORDERED ELEMENT, in this case the ordered elements are classification levels. My least upper bound is SECRET and my most lower bound is UNCLASSIFIED.

However the lattice could also be used for Integrity Levels such as:

VERY HIGH
HIGH
MEDIUM ----------I am a user, process, application at the medium level
LOW
VERY LOW
In the case of of Integrity levels you have to think about TRUST. Of course if I take for example the the VISTA operating system which is based on Biba then Integrity Levels would be used. As a user having access to the system I cannot tell a process running with administrative privilege what to do. Else any users on the system could take control of the system by getting highly privilege process to do things on their behalf. So no read down would be allowed in this case and this is an example of the Biba model.

Last but not least the lattice could be use for file permissions:

RWX
RW ---------User at this level
R

If I am a user with READ and WRITE (RW) access privilege then I cannot execute the file because I do not have execute permission which is the X under linux and UNIX.

Many people confuse the Lattice Model and many books says MAC = LATTICE, however the lattice can be use for other purposes.

There is also Role Based Access Control (RBAC) that exists out there. It COULD be used to simulate MAC but it is not MAC as it does not make use of Label on objects indicating sensitivity and categories. MAC also require a clearance that dominates the object.

You can get more info about RBAC at:http://csrc.nist.gov/groups/SNS/rbac/faq.html#03

Also note that many book uses the same acronym for Role Based Access Control and Rule Based Access Control which is RBAC, this can be confusing.

The proper way of writing the acronym for Rule Based Access Control is RuBAC, unfortunately it is not commonly used.

References:
There is a great article on technet that talks about the lattice in VISTA:
http://blogs.technet.com/b/steriley/archive/2006/07/21/442870.aspx

also see:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).
and
http://www.microsoft-watch.com/content/vista/gaging_vistas_integrity.html

QUESTION 161
Which type of attack involves impersonating a user or a system?

A. Smurfing attack
B. Spoofing attack
C. Spamming attack
D. Sniffing attack

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:

A spoofing attack is when an attempt is made to gain access to a computer system by posing as an authorized user or system. Spamming refers to sending out or posting junk advertising and unsolicited mail. A smurf attack is a type of denial-of-service attack using PING and a spoofed address. Sniffing refers to observing packets passing on a network.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 77).

QUESTION 162
Which of the following is NOT an advantage that TACACS+ has over TACACS?

A. Event logging
B. Use of two-factor password authentication
C. User has the ability to change his password
D. Ability for security tokens to be resynchronized

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Although TACACS+ provides better audit trails, event logging is a service that is provided with TACACS.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 121).

QUESTION 163
Which of the following remote access authentication systems is the most robust?

A. TACACS+
B. RADIUS
C. PAP
D. TACACS

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
TACACS+ is a proprietary Cisco enhancement to TACACS and is more robust than RADIUS. PAP is not a remote access authentication system but a remote node security protocol.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 122).

QUESTION 164
Which of the following is an example of a passive attack?

A. Denying services to legitimate users
B. Shoulder surfing
C. Brute-force password cracking
D. Smurfing

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Shoulder surfing is a form of a passive attack involving stealing passwords, personal identification numbers or other confidential information by looking over someone's shoulder. All other forms of attack are active attacks, where a threat makes a modification to the system in an attempt to take advantage of a vulnerability.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 3: Security Management Practices (page 63).

QUESTION 165
What does the Clark-Wilson security model focus on?

A. Confidentiality
B. Integrity
C. Accountability
D. Availability

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
The Clark-Wilson model addresses integrity. It incorporates mechanisms to enforce internal and external consistency, a separation of duty, and a mandatory integrity policy.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architectures and Models (page 205).

QUESTION 166
What does the simple security (ss) property mean in the Bell-LaPadula model?

A. No read up
B. No write down
C. No read down
D. No write up

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The ss (simple security) property of the Bell-LaPadula access control model states that reading of information by a subject at a lower sensitivity level from an object at a higher sensitivity level is not permitted (no read up).
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architectures and Models (page 202).

QUESTION 167
What does the (star) property mean in the Bell-LaPadula model?

A. No write up
B. No read up
C. No write down
D. No read down

Correct Answer: C

Section: Access Control
Explanation

Explanation/Reference:
The (star) property of the Bell-LaPadula access control model states that writing of information by a subject at a higher level of sensitivity to an object at a lower level of sensitivity is not permitted (no write down).
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architectures and Models (page 202).
Also check out: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 5: Security Models and Architecture (page 242, 243).

QUESTION 168
What does the (star) integrity axiom mean in the Biba model?

A. No read up
B. No write down
C. No read down
D. No write up

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The (star) integrity axiom of the Biba access control model states that an object at one level of integrity is not permitted to modify an object of a higher level of integrity (no write up).
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architectures and Models (page 205).

QUESTION 169
What does the simple integrity axiom mean in the Biba model?

A. No write down
B. No read down
C. No read up
D. No write up

Correct Answer: B

Section: Access Control
Explanation

Explanation/Reference:
The simple integrity axiom of the Biba access control model states that a subject at one level of integrity is not permitted to observe an object of a lower integrity (no read down).
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5:

Security Architectures and Models (page 205).

QUESTION 170
What is the Biba security model concerned with?

A. Confidentiality
B. Reliability
C. Availability
D. Integrity

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The Biba security model addresses the integrity of data being threatened when subjects at lower security levels are able to write to objects at higher security levels and when subjects can read data at lower levels.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 5: Security Models and Architecture (Page 244).

QUESTION 171
Which security model uses division of operations into different parts and requires different users to perform each part?

A. Bell-LaPadula model
B. Biba model
C. Clark-Wilson model
D. Non-interference model

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The Clark-Wilson model uses separation of duties, which divides an operation into different parts and requires different users to perform each part. This prevents authorized users from making unauthorized modifications to data, thereby protecting its integrity.

The Clark-Wilson integrity model provides a foundation for specifying and analyzing an integrity policy for a computing system.

The model is primarily concerned with formalizing the notion of information integrity. Information integrity is maintained by preventing corruption of data items in a system due to either error or malicious intent. An integrity policy describes how the data items in the system should be kept valid from one state of the system to the next and specifies the capabilities of various principals in the system. The model defines enforcement rules and certification rules.

The model's enforcement and certification rules define data items and processes that provide the basis for an integrity policy. The core of the model is based on the notion of a transaction.

A well-formed transaction is a series of operations that transition a system from one consistent state to another consistent state.
In this model the integrity policy addresses the integrity of the transactions.
The principle of separation of duty requires that the certifier of a transaction and the implementer be different entities.

The model contains a number of basic constructs that represent both data items and processes that operate on those data items. The key data type in the ClarkWilson model is a Constrained Data Item (CDI). An Integrity Verification Procedure (IVP) ensures that all CDIs in the system are valid at a certain state. Transactions that enforce the integrity policy are represented by Transformation Procedures (TPs). A TP takes as input a CDI or Unconstrained Data Item (UDI) and produces a CDI. A TP must transition the system from one valid state to another valid state. UDIs represent system input (such as that provided by a user or adversary). A TP must guarantee (via certification) that it transforms all possible values of a UDI to a "safe" CDI.

In general, preservation of data integrity has three goals:

Prevent data modification by unauthorized parties
Prevent unauthorized data modification by authorized parties
Maintain internal and external consistency (i.e. data reflects the real world)

Clark-Wilson addresses all three rules but BIBA addresses only the first rule of intergrity.

References:
HARRIS, Shon, All-In-One CISSP Certification Fifth Edition, McGraw-Hill/Osborne, Chapter 5: Security Architecture and Design (Page 341-344).
and
http://en.wikipedia.org/wiki/Clark-Wilson_model

QUESTION 172
What is the main objective of proper separation of duties?

A. To prevent employees from disclosing sensitive information.

B. To ensure access controls are in place.
C. To ensure that no single individual can compromise a system.
D. To ensure that audit trails are not tampered with.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The primary objective of proper separation of duties is to ensure that one person acting alone cannot compromise the company's security in any way. A proper separation of duties does not prevent employees from disclosing information, nor does it ensure that access controls are in place or that audit trails are not tampered with.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 12: Operations Security (Page 808).

QUESTION 173
Which of the following is related to physical security and is not considered a technical control?

A. Access control Mechanisms
B. Intrusion Detection Systems
C. Firewalls
D. Locks

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
All of the above are considered technical controls except for locks, which are physical controls.

Administrative, Technical, and Physical Security Controls

Administrative security controls are primarily policies and procedures put into place to define and guide employee actions in dealing with the organization's sensitive information. For example, policy might dictate (and procedures indicate how) that human resources conduct background checks on employees with access to sensitive information. Requiring that information be classified and the process to classify and review information classifications is another example of an administrative control. The organization security awareness program is an administrative control used to make employees cognizant of their security roles and responsibilities. Note that administrative security controls in the form of a policy can be enforced or verified with technical or physical security controls. For instance, security policy may state that computers without antivirus software cannot connect to the network, but a technical control, such as network access control software, will check for antivirus software when a computer tries to attach to the network.

Technical security controls (also called logical controls) are devices, processes, protocols, and other measures used to protect the C.I.A. of sensitive information. Examples include logical access systems, encryptions systems, antivirus systems, firewalls, and intrusion detection systems.

Physical security controls are devices and means to control physical access to sensitive information and to protect the availability of the information. Examples are physical access systems (fences, mantraps, guards), physical intrusion detection systems (motion detector, alarm system), and physical protection systems (sprinklers, backup generator). Administrative and technical controls depend on proper physical security controls being in place. An administrative policy allowing only authorized employees access to the data center do little good without some kind of physical access control. From the GIAC.ORG website

QUESTION 174
Which of the following floors would be most appropriate to locate information processing facilities in a 6-stories building?

A. Basement
B. Ground floor
C. Third floor
D. Sixth floor

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
You data center should be located in the middle of the facility or the core of a building to provide protection from natural disasters or bombs and provide easier access to emergency crewmembers if necessary. By being at the core of the facility the external wall would act as a secondary layer of protection as well.

Information processing facilities should not be located on the top floors of buildings in case of a fire or flooding coming from the roof. Many crimes and theft have also been conducted by simply cutting a large hole on the roof.

They should not be in the basement because of flooding where water has a natural tendancy to flow down :-) Even a little amount of water would affect your operation considering the quantity of electrical cabling sitting directly on the cement floor under under your raise floor.

The data center should not be located on the first floor due to the presence of the main entrance where people are coming in and out. You have a lot of high traffic areas such as the elevators, the loading docks, cafeteria, coffee shopt, etc.. Really a bad location for a data center.

So it was easy to come up with the answer by using the process of elimination where the top, the bottom, and the basement are all bad choices. That left you with only one possible answer which is the third floor.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 5th Edition, Page 425.

QUESTION 175

Which of the following Operation Security controls is intended to prevent unauthorized intruders from internally or externally accessing the system, and to lower the amount and impact of unintentional errors that are entering the system?

A. Detective Controls
B. Preventative Controls
C. Corrective Controls
D. Directive Controls

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
In the Operations Security domain, Preventative Controls are designed to prevent unauthorized intruders from internally or externally accessing the system, and to lower the amount and impact of unintentional errors that are entering the system.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 217.

QUESTION 176
This baseline sets certain thresholds for specific errors or mistakes allowed and the amount of these occurrences that can take place before it is considered suspicious?

A. Checkpoint level
B. Ceiling level
C. Clipping level
D. Threshold level

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Organizations usually forgive a particular type, number, or pattern of violations, thus permitting a predetermined number of user errors before gathering this data for analysis. An organization attempting to track all violations, without sophisticated statistical computing ability, would be unable to manage the sheer quantity of such data. To make a violation listing effective, a clipping level must be established.

The clipping level establishes a baseline for violation activities that may be normal user errors. Only after this baseline is exceeded is a violation record produced. This solution is particularly effective for small- to medium-sized installations. Organizations with large-scale computing facilities often track all violations and use statistical routines to cull out the minor infractions (e.g., forgetting a password or mistyping it several times).

If the number of violations being tracked becomes unmanageable, the first step in correcting the problems should be to analyze why the condition has occurred. Do users understand how they are to interact with the computer resource? Are the rules too difficult to follow? Violation tracking and analysis can be valuable tools in assisting an organization to develop thorough but useable controls. Once these are in place and records are produced that accurately reflect serious violations, tracking and analysis become the first line of defense. With this procedure, intrusions are discovered before major damage occurs and sometimes early enough to catch the perpetrator. In addition, business protection and preservation are strengthened.

The following answers are incorrect:
All of the other choices presented were simply detractors.

The following reference(s) were used for this question:
Handbook of Information Security Management

QUESTION 177
Which type of control is concerned with avoiding occurrences of risks?

A. Deterrent controls
B. Detective controls
C. Preventive controls
D. Compensating controls

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Preventive controls are concerned with avoiding occurrences of risks while deterrent controls are concerned with discouraging violations. Detecting controls identify occurrences and compensating controls are alternative controls, used to compensate weaknesses in other controls. Supervision is an example of compensating control.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 178
Which type of control is concerned with restoring controls?

A. Compensating controls
B. Corrective controls
C. Detective controls
D. Preventive controls

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Corrective controls are concerned with remedying circumstances and restoring controls.

Detective controls are concerned with investigating what happen after the fact such as logs and video surveillance tapes for example.

Compensating controls are alternative controls, used to compensate weaknesses in other controls.
Preventive controls are concerned with avoiding occurrences of risks.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 179
Which of the following biometric parameters are better suited for authentication use over a long period of time?

A. Iris pattern
B. Voice pattern
C. Signature dynamics
D. Retina pattern

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The iris pattern is considered lifelong. Unique features of the iris are: freckles, rings, rifts, pits, striations, fibers, filaments, furrows, vasculature and coronas. Voice, signature and retina patterns are more likely to change over time, thus are not as suitable for authentication over a long period of time without needing reenrollment.
Source: FERREL, Robert G, Questions and Answers for the CISSP Exam, domain 1 (derived from the Information Security Management Handbook, 4th Ed., by Tipton & Krause).

QUESTION 180
In the CIA triad, what does the letter A stand for?

A. Auditability
B. Accountability
C. Availability

D. Authentication

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The CIA triad stands for Confidentiality, Integrity and Availability.

QUESTION 181
Which TCSEC class specifies discretionary protection?

A. B2
B. B1
C. C2
D. C1

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
C1 involves discretionary protection, C2 involves controlled access protection, B1 involves labeled security protection and B2 involves structured protection.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 182
Which of the following access control techniques best gives the security officers the ability to specify and enforce enterprise-specific security policies in a way that maps naturally to an organization's structure?

A. Access control lists
B. Discretionary access control
C. Role-based access control
D. Non-mandatory access control

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Role-based access control (RBAC) gives the security officers the ability to specify and enforce enterprise-specific security policies in a way that maps naturally to an organization's structure. Each user is assigned one or more roles, and each role is assigned one or more privileges that are given to users in that role. An access control list (ACL) is a table that tells a system which access rights each user has to a particular system object. With discretionary access control, administration is decentralized and owners of resources control other users' access. Non-mandatory access control is not a defined access control technique.
Source: ANDRESS, Mandy, Exam Cram CISSP, Coriolis, 2001, Chapter 2: Access Control Systems and Methodology (page 9).

QUESTION 183
Which access control model was proposed for enforcing access control in government and military applications?

A. Bell-LaPadula model
B. Biba model
C. Sutherland model
D. Brewer-Nash model

Correct Answer: A
Section: Access Control
Explanation
Explanation/Reference:
The Bell-LaPadula model, mostly concerned with confidentiality, was proposed for enforcing access control in government and military applications. It supports mandatory access control by determining the access rights from the security levels associated with subjects and objects. It also supports discretionary access control by checking access rights from an access matrix. The Biba model, introduced in 1977, the Sutherland model, published in 1986, and the Brewer-Nash model, published in 1989, are concerned with integrity.
Source: ANDRESS, Mandy, Exam Cram CISSP, Coriolis, 2001, Chapter 2: Access Control Systems and Methodology (page 11).

QUESTION 184
Which access control model achieves data integrity through well-formed transactions and separation of duties?

A. Clark-Wilson model
B. Biba model
C. Non-interference model
D. Sutherland model

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:

The Clark-Wilson model differs from other models that are subject- and object- oriented by introducing a third access element programs resulting in what is called an access triple, which prevents unauthorized users from modifying data or programs. The Biba model uses objects and subjects and addresses integrity based on a hierarchical lattice of integrity levels. The non-interference model is related to the information flow model with restrictions on the information flow. The Sutherland model approaches integrity by focusing on the problem of inference.
Source: ANDRESS, Mandy, Exam Cram CISSP, Coriolis, 2001, Chapter 2: Access Control Systems and Methodology (page 12).
And: KRAUSE, Micki & TIPTON, Harold F., Handbook of Information Security Management, CRC Press, 1997, Domain 1: Access Control.

QUESTION 185
For maximum security design, what type of fence is most effective and cost-effective method (Foot are being used as measurement unit below)?

A. 3' to 4' high
B. 6' to 7' high
C. 8' high and above with strands of barbed wire
D. Double fencing

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The most commonly used fence is the chain linked fence and it is the most affordable. The standard is a six-foot high fence with two-inch mesh square openings. The material should consist of nine-gauge vinyl or galvanized metal. Nine-gauge is a typical fence material installed in residential areas.

Additionally, it is recommended to place barbed wire strands angled out from the top of the fence at a 45° angle and away from the protected area with three strands running across the top. This will provide for a seven-foot fence. There are several variations of the use of “top guards” using V-shaped barbed wire or the use of concertina wire as an enhancement, which has been a replacement for more traditional three strand barbed wire “top guards.”

The fence should be fastened to ridged metal posts set in concrete every six feet with additional bracing at the corners and gate openings. The bottom of the fence should be stabilized against intruders crawling under by attaching posts along the bottom to keep the fence from being pushed or pulled up from the bottom. If the soil is sandy, the bottom edge of the fence should be installed below ground level.

For maximum security design, the use of double fencing with rolls of concertina wire positioned between the two fences is the most effective deterrent and costefficient method. In this design, an intruder is required to use an extensive array of ladders and equipment to breach the fences.

Most fencing is largely a psychological deterrent and a boundary marker rather than a barrier, because in most cases such fences can be rather easily penetrated unless added security measures are taken to enhance the security of the fence. Sensors attached to the fence to provide electronic monitoring of cutting or scaling the fence can be used.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 24416-24431). Auerbach Publications. Kindle Edition.

QUESTION 186
Which of the following protection devices is used for spot protection within a few inches of the object, rather than for overall room security monitoring?

A. Wave pattern motion detectors
B. Capacitance detectors
C. Field-powered devices
D. Audio detectors

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Capacitance detectors monitor an electrical field surrounding the object being monitored. They are used for spot protection within a few inches of the object, rather than for overall room security monitoring used by wave detectors. Penetration of this field changes the electrical capacitance of the field enough to generate and alarm. Wave pattern motion detectors generate a frequency wave pattern and send an alarm if the pattern is disturbed as it is reflected back to its receiver. Fieldpowered devices are a type of personnel access control devices. Audio detectors simply monitor a room for any abnormal sound wave generation and trigger an alarm.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 10:

Physical security (page 344).

QUESTION 187
Physical security is accomplished through proper facility construction, fire and water protection, anti-theft mechanisms, intrusion detection systems, and security procedures that are adhered to and enforced. Which of the following is not a component that achieves this type of security?

A. Administrative control mechanisms
B. Integrity control mechanisms
C. Technical control mechanisms
D. Physical control mechanisms

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Integrity Controls Mechanisms are not part of physical security. All of the other detractors were correct this one was the wrong one that does not belong to Physical Security. Below you have more details extracted from the SearchSecurity web site:
Information security depends on the security and management of the physical space in which computer systems operate. Domain 9 of the CISSP exam's Common Body of Knowledge addresses the challenges of securing the physical space, its systems and the people who work within it by use of administrative, technical and physical controls. The following Qs are covered:

Facilities management: The administrative processes that govern the maintenance and protection of the physical operations space, from site selection through emergency response.
Risks, issues and protection strategies: Risk identification and the selection of security protection components.
Perimeter security: Typical physical protection controls.

Facilities management
Facilities management is a complex component of corporate security that ranges from the planning of a secure physical site to the management of the physical information system environment. Facilities management responsibilities include site selection and physical security planning (i.e. facility construction, design and layout, fire and water damage protection, antitheft mechanisms, intrusion detection and security procedures.) Protections must extend to both people and assets. The necessary level of protection depends on the value of the assets and data. CISSP® candidates must learn the concept of critical-path analysis as a means of determining a component's business function criticality relative to the cost of operation and replacement. Furthermore, students need to gain an understanding of the optimal location and physical attributes of a secure facility. Among the Qs covered in this domain are site inspection, location, accessibility and obscurity, considering the area crime rate, and the likelihood of natural hazards such as floods or earthquakes.

This domain also covers the quality of construction material, such as its protective qualities and load capabilities, as well as how to lay out the structure to minimize risk of forcible entry and accidental damage. Regulatory compliance is also touched on, as is preferred proximity to civil protection services, such as fire and police stations. Attention is given to computer and equipment rooms, including their location, configuration (entrance/egress requirements) and their proximity to wiring distribution centers at the site.

Physical risks, issues and protection strategies
An overview of physical security risks includes risk of theft, service interruption, physical damage, compromised system integrity and unauthorized disclosure of information. Interruptions to business can manifest due to loss of power, services, telecommunications connectivity and water supply. These can also seriously compromise electronic security monitoring alarm/response devices. Backup options are also covered in this domain, as is a strategy for quantifying the risk exposure by simple formula.

Investment in preventive security can be costly. Appropriate redundancy of people skills, systems and infrastructure must be based on the criticality of the data and assets to be preserved. Therefore a strategy is presented that helps determine the selection of cost appropriate controls. Among the Qs covered in this domain are regulatory and legal requirements, common standard security protections such as locks and fences, and the importance of establishing service level agreements for maintenance and disaster support. Rounding out the optimization approach are simple calculations for determining mean time between failure and mean time to repair (used to estimate average equipment life expectancy) — essential for estimating the cost/benefit of purchasing and maintaining redundant equipment.

As the lifeblood of computer systems, special attention is placed on adequacy, quality and protection of power supplies. CISSP candidates need to understand power supply concepts and terminology, including those for quality (i.e. transient noise vs. clean power); types of interference (EMI and RFI); and types of interruptions such as power excess by spikes and surges, power loss by fault or blackout, and power degradation from sags and brownouts. A simple formula is presented for determining the total cost per hour for backup power. Proving power reliability through testing is recommended and the advantages of three power protection approaches are discussed (standby UPS, power line conditioners and backup sources) including minimum requirements for primary and alternate power provided.

Environmental controls are explored in this domain, including the value of positive pressure water drains and climate monitoring devices used to control temperature, humidity and reduce static electricity. Optimal temperatures and humidity settings are provided. Recommendations include strict procedures during emergencies, preventing typical risks (such as blocked fans), and the use of antistatic armbands and hygrometers. Positive pressurization for proper ventilation and monitoring for air born contaminants is stressed.

The pros and cons of several detection response systems are deeply explored in this domain. The concept of combustion, the classes of fire and fire extinguisher ratings are detailed. Mechanisms behind smoke-activated, heat-activated and flame-activated devices and Automatic Dial-up alarms are covered, along with their advantages, costs and shortcomings. Types of fire sources are distinguished and the effectiveness of fire suppression methods for each is included. For instance, Halon and its approved replacements are covered, as are the advantages and the inherent risks to equipment of the use of water sprinklers.

Administrative controls

The physical security domain also deals with administrative controls applied to physical sites and assets. The need for skilled personnel, knowledge sharing between them, separation of duties, and appropriate oversight in the care and maintenance of equipment and environments is stressed. A list of management duties including hiring checks, employee maintenance activities and recommended termination procedures is offered. Emergency measures include accountability for evacuation and system shutdown procedures, integration with disaster and business continuity plans, assuring documented procedures are easily available during different types of emergencies, the scheduling of periodic equipment testing, administrative reviews of documentation, procedures and recovery plans, responsibilities delegation, and personnel training and drills.

Perimeter security

Domain nine also covers the devices and techniques used to control access to a space. These include access control devices, surveillance monitoring, intrusion detection and corrective actions. Specifications are provided for optimal external boundary protection, including fence heights and placement, and lighting placement and types. Selection of door types and lock characteristics are covered. Surveillance methods and intrusion-detection methods are explained, including the use of video monitoring, guards, dogs, proximity detection systems, photoelectric/photometric systems, wave pattern devices, passive infrared systems, and sound and motion detectors, and current flow sensitivity devices that specifically address computer theft. Room lock types — both preset and cipher locks (and their variations) -- device locks, such as portable laptop locks, lockable server bays, switch control locks and slot locks, port controls, peripheral switch controls and cable trap locks are also covered. Personal access control methods used to identify authorized users for site entry are covered at length, noting social engineering risks such as piggybacking. Wireless proximity devices, both user access and system sensing readers are covered (i.e. transponder based, passive devices and field powered devices) in this domain.

Now that you've been introduced to the key concepts of Domain 9, watch the Domain 9, Physical Security video
Return to the CISSP Essentials Security School main page
See all SearchSecurity.com's resources on CISSP certification training

Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2001, Page 280.

QUESTION 188
The National Institute of Standards and Technology (NIST) standard pertaining to perimeter protection states that critical areas should be illuminated up to?

A. Illiminated at nine feet high with at least three foot-candles
B. Illiminated at eight feet high with at least three foot-candles
C. Illiminated at eight feet high with at least two foot-candles
D. Illuminated at nine feet high with at least two foot-candles

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The National Institute of Standards and Technology (NIST) standard pertaining to perimeter protection states that critical areas should be illuminated eight feet high with at least two foot-candles.

It can also be referred to as illuminating to a height of eight feet, with a BRIGHTNESS of two foot-candles.

One footcandle ≈ 10.764 lux. The footcandle (or lumen per square foot) is a non-SI unit of illuminance. Like the BTU, it is obsolete but it is still in fairly common use in the United States, particularly in construction-related engineering and in building codes. Because lux and footcandles are different units of the same quantity, it is perfectly valid to convert footcandles to lux and vice versa.

The name "footcandle" conveys "the illuminance cast on a surface by a one-candela source one foot away." As natural as this sounds, this style of name is now frowned upon, because the dimensional formula for the unit is not foot • candela, but lumens per square foot.

Some sources do however note that the "lux" can be thought of as a "metre-candle" (i.e. the illuminance cast on a surface by a one-candela source one meter away). A source that is farther away casts less illumination than one that is close, so one lux is less illuminance than one footcandle. Since illuminance follows the inverse-square law, and since one foot = 0.3048 m, one lux = 0.30482 footcandle ≈ 1/10.764 footcandle.

TIPS FROM CLEMENT:

Illuminance (light level) – The amount of light, measured in foot-candles (US unit), that falls n a surface, either horizontal or vertical.

Parking lots lighting needs to be an average of 2 foot candles; uniformity of not more than 3:1, no area less than 1 fc.

All illuminance measurements are to be made on the horizontal plane with a certified light meter calibrated to NIST standards using traceable light sources.

The CISSP Exam Cram 2 from Michael Gregg says:
Lighting is a commonly used form of perimeter protection.

Some studies have found that up to 80% of criminal acts at businesses and shopping centers happen in adjacent parking lots. Therefore, it's easy to see why lighting can be such an important concern.

Outside lighting discourages prowlers and thieves.
The National Institute of Standards and Technologies (NIST) states that, for effective perimeter control, buildings should be illuminated 8 feet high, with 2-foot candle power.

Reference used for this question:

HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2001, Page 325.
and
Shon's AIO v5 pg 459
and
http://en.wikipedia.org/wiki/Foot-candle

QUESTION 189
This is a common security issue that is extremely hard to control in large environments. It occurs when a user has more computer rights, permissions, and access than what is required for the tasks the user needs to fulfill. What best describes this scenario?

A. Excessive Rights
B. Excessive Access
C. Excessive Permissions
D. Excessive Privileges

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Even thou all 4 terms are very close to each other, the best choice is Excessive Privileges which would include the other three choices presented.

Reference(s) used for this question:

HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2001, Page 645.
and

QUESTION 190
Which of the following are additional access control objectives?

A. Consistency and utility
B. Reliability and utility
C. Usefulness and utility
D. Convenience and utility

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Availability assures that a system's authorized users have timely and uninterrupted access to the information in the system. The additional access control objectives are reliability and utility. These and other related objectives flow from the organizational security policy. This policy is a high-level statement of management intent regarding the control of access to information and the personnel who are authorized to receive that information. Three things that must be considered for the planning and implementation of access control mechanisms are the threats to the system, the system's vulnerability to these threats, and the risk that the threat may materialize
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 32.

QUESTION 191
Logical or technical controls involve the restriction of access to systems and the protection of information. Which of the following statements pertaining to these types of controls is correct?

A. Examples of these types of controls include policies and procedures, security awareness training, background checks, work habit checks but do not include a review of vacation history, and also do not include increased supervision.
B. Examples of these types of controls do not include encryption, smart cards, access lists, and transmission protocols.
C. Examples of these types of controls are encryption, smart cards, access lists, and transmission protocols.
D. Examples of these types of controls include policies and procedures, security awareness training, background checks, work habit checks, a review of vacation history, and increased supervision.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Logical or technical controls involve the restriction of access to systems and the protection of information. Examples of these types of controls are encryption, smart cards, access lists, and transmission protocols.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 192
Controls provide accountability for individuals who are accessing sensitive information. This accountability is accomplished:

A. through access control mechanisms that require identification and authentication and through the audit function.
B. through logical or technical controls involving the restriction of access to systems and the protection of information.
C. through logical or technical controls but not involving the restriction of access to systems and the protection of information.
D. through access control mechanisms that do not require identification and authentication and do not operate through the audit function.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Controls provide accountability for individuals who are accessing sensitive information. This accountability is accomplished through access control mechanisms that require identification and authentication and through the audit function. These controls must be in accordance with and accurately represent the organization's security policy. Assurance procedures ensure that the control mechanisms correctly implement the security policy for the entire life cycle of an information system.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 193
In Discretionary Access Control the subject has authority, within certain limitations,

A. but he is not permitted to specify what objects can be accessible and so we need to get an independent third party to specify what objects can be accessible.
B. to specify what objects can be accessible.
C. to specify on a aggregate basis without understanding what objects can be accessible.
D. to specify in full detail what objects can be accessible.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
With Discretionary Access Control, the subject has authority, within certain limitations, to specify what objects can be accessible.

For example, access control lists can be used. This type of access control is used in local, dynamic situations where the subjects must have the discretion to specify what resources certain users are permitted to access.

When a user, within certain limitations, has the right to alter the access control to certain objects, this is termed as user-directed discretionary access control. In some instances, a hybrid approach is used, which combines the features of user-based and identity-based discretionary access control.

References:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.
and
HARRIS, Shon, All-In-One CISSP Certification Exam Guide 5th Edition, McGraw-Hill/Osborne, 2010, Chapter 4: Access Control (page 210-211).

QUESTION 194
In non-discretionary access control using Role Based Access Control (RBAC), a central authority determines what subjects can have access to certain objects based on the organizational security policy. The access controls may be based on:

A. The societies role in the organization
B. The individual's role in the organization
C. The group-dynamics as they relate to the individual's role in the organization
D. The group-dynamics as they relate to the master-slave role in the organization

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
In Non-Discretionary Access Control, when Role Based Access Control is being used, a central authority determines what subjects can have access to certain objects based on the organizational security policy. The access controls may be based on the individual's role in the organization.

Reference(S) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 195
In an organization where there are frequent personnel changes, non-discretionary access control using Role Based Access Control (RBAC) is useful because:

A. people need not use discretion
B. the access controls are based on the individual's role or title within the organization.
C. the access controls are not based on the individual's role or title within the organization
D. the access controls are often based on the individual's role or title within the organization

Correct Answer: B
Section: Access Control
Explanation
Explanation/Reference:

In an organization where there are frequent personnel changes, non-discretionary access control (also called Role Based Access Control) is useful because the access controls are based on the individual's role or title within the organization. You can easily configure a new employee acces by assigning the user to a role that has been predefine. The user will implicitly inherit the permissions of the role by being a member of that role.

These access permissions defined within the role do not need to be changed whenever a new person takes over the role.

Another type of non-discretionary access control model is the Rule Based Access Control (RBAC or RuBAC) where a global set of rule is uniformly applied to all subjects accessing the resources. A good example of RuBAC would be a firewall.

This question is a sneaky one, one of the choice has only one added word to it which is often. Reading questions and their choices very carefully is a must for the real exam. Reading it twice if needed is recommended.

Shon Harris in her book list the following ways of managing RBAC:

Role-based access control can be managed in the following ways:

Non-RBAC Users are mapped directly to applications and no roles are used. (No roles being used)

Limited RBAC Users are mapped to multiple roles and mapped directly to other types of applications that do not have role-based access functionality. (A mix of roles for applications that supports roles and explicit access control would be used for applications that do not support roles)

Hybrid RBAC Users are mapped to multiapplication roles with only selected rights assigned to those roles.

Full RBAC Users are mapped to enterprise roles. (Roles are used for all access being granted)

NIST defines RBAC as:
Security administration can be costly and prone to error because administrators usually specify access control lists for each user on the system individually. With RBAC, security is managed at a level that corresponds closely to the organization's structure. Each user is assigned one or more roles, and each role is assigned one or more privileges that are permitted to users in that role. Security administration with RBAC consists of determining the operations that must be executed by persons in particular jobs, and assigning employees to the proper roles. Complexities introduced by mutually exclusive roles or role hierarchies are handled by the RBAC software, making security administration easier.

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 32.
and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition McGraw-Hill.
and
http://csrc.nist.gov/groups/SNS/rbac/

QUESTION 196
Another type of access control is lattice-based access control. In this type of control a lattice model is applied. How is this type of access control concept applied?

A. The pair of elements is the subject and object, and the subject has an upper bound equal or higher than the upper bound of the object being accessed.
B. The pair of elements is the subject and object, and the subject has an upper bound lower then the upper bound of the object being accessed.
C. The pair of elements is the subject and object, and the subject has no special upper or lower bound needed within the lattice.
D. The pair of elements is the subject and object, and the subject has no access rights in relation to an object.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
To apply this concept to access control, the pair of elements is the subject and object, and the subject has to have an upper bound equal or higher than the object being accessed.

WIKIPEDIA has a great explanation as well:

In computer security, lattice-based access control (LBAC) is a complex access control based on the interaction between any combination of objects (such as resources, computers, and applications) and subjects (such as individuals, groups or organizations).
In this type of label-based mandatory access control model, a lattice is used to define the levels of security that an object may have and that a subject may have access to. The subject is only allowed to access an object if the security level of the subject is greater than or equal to that of the object.

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 34.
and
http://en.wikipedia.org/wiki/Lattice-based_access_control

QUESTION 197
Detective/Technical measures:

A. include intrusion detection systems and automatically-generated violation reports from audit trail information.
B. do not include intrusion detection systems and automatically-generated violation reports from audit trail information.
C. include intrusion detection systems but do not include automatically-generated violation reports from audit trail information.
D. include intrusion detection systems and customised-generated violation reports from audit trail information.

Correct Answer: A

Section: Access Control
Explanation
Explanation/Reference:
Detective/Technical measures include intrusion detection systems and automatically-generated violation reports from audit trail information. These reports can indicate variations from "normal" operation or detect known signatures of unauthorized access episodes. In order to limit the amount of audit information flagged and reported by automated violation analysis and reporting mechanisms, clipping levels can be set.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 35.

QUESTION 198
Identification and authentication are the keystones of most access control systems. Identification establishes:

A. User accountability for the actions on the system.
B. Top management accountability for the actions on the system.
C. EDP department accountability for the actions of users on the system.
D. Authentication for actions on the system

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Identification and authentication are the keystones of most access control systems. Identification establishes user accountability for the actions on the system.

The control environment can be established to log activity regarding the identification, authentication, authorization, and use of privileges on a system. This can be used to detect the occurrence of errors, the attempts to perform an unauthorized action, or to validate when provided credentials were exercised. The logging system as a detective device provides evidence of actions (both successful and unsuccessful) and tasks that were executed by authorized users.

Once a person has been identified through the user ID or a similar value, she must be authenticated, which means she must prove she is who she says she is. Three general factors can be used for authentication: something a person knows, something a person has, and something a person is. They are also commonly called authentication by knowledge, authentication by ownership, and authentication by characteristic.

For a user to be able to access a resource, he first must prove he is who he claims to be, has the necessary credentials, and has been given the necessary rights or privileges to perform the actions he is requesting. Once these steps are completed successfully, the user can access and use network resources; however, it is necessary to track the user's activities and enforce accountability for his actions.

Identification describes a method of ensuring that a subject (user, program, or process) is the entity it claims to be. Identification can be provided with the use of a username or account number. To be properly authenticated, the subject is usually required to provide a second piece to the credential set. This piece could be a password, passphrase, cryptographic key, personal identification number (PIN), anatomical attribute, or token.

These two credential items are compared to information that has been previously stored for this subject. If these credentials match the stored information, the subject is authenticated. But we are not done yet. Once the subject provides its credentials and is properly identified, the system it is trying to access needs to determine if this subject has been given the necessary rights and privileges to carry out the requested actions. The system will look at some type of access control matrix or compare security labels to verify that this subject may indeed access the requested resource and perform the actions it is attempting. If the system determines that the subject may access the resource, it authorizes the subject.

Although identification, authentication, authorization, and accountability have close and complementary definitions, each has distinct functions that fulfill a specific requirement in the process of access control. A user may be properly identified and authenticated to the network, but he may not have the authorization to access the files on the file server. On the other hand, a user may be authorized to access the files on the file server, but until she is properly identified and authenticated, those resources are out of reach.

Reference(s) used for this question:

Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition: Access Control ((ISC)2 Press) (Kindle Locations 889-892). Auerbach Publications. Kindle Edition. and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 3875-3878). McGraw-Hill. Kindle Edition.
and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 3833-3848). McGraw-Hill. Kindle Edition.
and
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36.

QUESTION 199
Passwords can be required to change monthly, quarterly, or at other intervals:

A. depending on the criticality of the information needing protection
B. depending on the criticality of the information needing protection and the password's frequency of use
C. depending on the password's frequency of use
D. not depending on the criticality of the information needing protection but depending on the password's frequency of use

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Passwords can be compromised and must be protected. In the ideal case, a password should only be used once. The changing of passwords can also fall between these two extremes. Passwords can be required to change monthly, quarterly, or at other intervals, depending on the criticality of the information needing protection and the password's frequency of use. Obviously, the more times a password is used, the more chance there is of it being compromised.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36 & 37.

QUESTION 200
When submitting a passphrase for authentication, the passphrase is converted into ...

A. a virtual password by the system

B. a new passphrase by the system
C. a new passphrase by the encryption technology
D. a real password by the system which can be used forever

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Passwords can be compromised and must be protected. In the ideal case, a password should only be used once. The changing of passwords can also fall between these two extremes.

Passwords can be required to change monthly, quarterly, or at other intervals, depending on the criticality of the information needing protection and the password's frequency of use.

Obviously, the more times a password is used, the more chance there is of it being compromised.

It is recommended to use a passphrase instead of a password. A passphrase is more resistant to attacks. The passphrase is converted into a virtual password by the system. Often time the passphrase will exceed the maximum length supported by the system and it must be trucated into a Virtual Password.

Reference(s) used for this question:

http://www.itl.nist.gov/fipspubs/fip112.htm
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 36 & 37.

QUESTION 201
An alternative to using passwords for authentication in logical or technical access control is:

A. manage without passwords
B. biometrics

C. not there
D. use of them for physical access control

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
An alternative to using passwords for authentication in logical or technical access control is biometrics. Biometrics are based on the Type 3 authentication mechanism-something you are.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.

QUESTION 202
Almost all types of detection permit a system's sensitivity to be increased or decreased during an inspection process. If the system's sensitivity is increased, such as in a biometric authentication system, the system becomes increasingly selective and has the possibility of generating:

A. Lower False Rejection Rate (FRR)
B. Higher False Rejection Rate (FRR)
C. Higher False Acceptance Rate (FAR)
D. It will not affect either FAR or FRR

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Almost all types of detection permit a system's sensitivity to be increased or decreased during an inspection process. If the system's sensitivity is increased, such as in a biometric authentication system, the system becomes increasingly selective and has a higher False Rejection Rate (FRR).

Conversely, if the sensitivity is decreased, the False Acceptance Rate (FRR) will increase. Thus, to have a valid measure of the system performance, the Cross Over Error (CER) rate is used. The Crossover Error Rate (CER) is the point at which the false rejection rates and the false acceptance rates are equal. The lower the value of the CER, the more accurate the system.

There are three categories of biometric accuracy measurement (all represented as percentages):

False Reject Rate (a Type I Error): When authorized users are falsely rejected as unidentified or unverified.

False Accept Rate (a Type II Error): When unauthorized persons or imposters are falsely accepted as authentic.

Crossover Error Rate (CER): The point at which the false rejection rates and the false acceptance rates are equal. The smaller the value of the CER, the more accurate the system.

NOTE:
Within the ISC2 book they make use of the term Accept or Acceptance and also Reject or Rejection when referring to the type of errors within biometrics. Below we make use of Acceptance and Rejection throughout the text for conistency. However, on the real exam you could see either of the terms.
Performance of biometrics

Different metrics can be used to rate the performance of a biometric factor, solution or application. The most common performance metrics are the False Acceptance Rate FAR and the False Rejection Rate FRR.

When using a biometric application for the first time the user needs to enroll to the system. The system requests fingerprints, a voice recording or another biometric factor from the operator, this input is registered in the database as a template which is linked internally to a user ID. The next time when the user wants to authenticate or identify himself, the biometric input provided by the user is compared to the template(s) in the database by a matching algorithm which responds with acceptance (match) or rejection (no match). FAR and FRR
The FAR or False Acceptance rate is the probability that the system incorrectly authorizes a non-authorized person, due to incorrectly matching the biometric input with a valid template. The FAR is normally expressed as a percentage, following the FAR definition this is the percentage of invalid inputs which are incorrectly accepted.

The FRR or False Rejection Rate is the probability that the system incorrectly rejects access to an authorized person, due to failing to match the biometric input provided by the user with a stored template. The FRR is normally expressed as a percentage, following the FRR definition this is the percentage of valid inputs which are incorrectly rejected.

FAR and FRR are very much dependent on the biometric factor that is used and on the technical implementation of the biometric solution. Furthermore the FRR is strongly person dependent, a personal FRR can be determined for each individual.

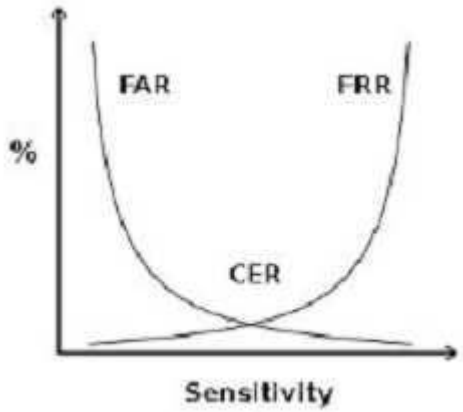
Take this into account when determining the FRR of a biometric solution, one person is insufficient to establish an overall FRR for a solution. Also FRR might increase due to environmental conditions or incorrect use, for example when using dirty fingers on a fingerprint reader. Mostly the FRR lowers when a user gains more experience in how to use the biometric device or software.

FAR and FRR are key metrics for biometric solutions, some biometric devices or software even allow to tune them so that the system more quickly matches or rejects. Both FRR and FAR are important, but for most applications one of them is considered most important. Two examples to illustrate this:

When biometrics are used for logical or physical access control, the objective of the application is to disallow access to unauthorized individuals under all circumstances. It is clear that a very low FAR is needed for such an application, even if it comes at the price of a higher FRR.

When surveillance cameras are used to screen a crowd of people for missing children, the objective of the application is to identify any missing children that come up on the screen. When the identification of those children is automated using a face recognition software, this software has to be set up with a low FRR. As such a higher number of matches will be false positives, but these can be reviewed quickly by surveillance personnel.

False Acceptance Rate is also called False Match Rate, and False Rejection Rate is sometimes referred to as False Non-Match Rate.
crossover error rate



Above see a graphical representation of FAR and FRR errors on a graph, indicating the CER
CER

The Crossover Error Rate or CER is illustrated on the graph above. It is the rate where both FAR and FRR are equal.

The matching algorithm in a biometric software or device uses a (configurable) threshold which determines how close to a template the input must be for it to be considered a match. This threshold value is in some cases referred to as sensitivity, it is marked on the X axis of the plot. When you reduce this threshold there will be more false acceptance errors (higher FAR) and less false rejection errors (lower FRR), a higher threshold will lead to lower FAR and higher FRR.
Speed
Most manufacturers of biometric devices and softwares can give clear numbers on the time it takes to enroll as well on the time for an individual to be authenticated or identified using their application. If speed is important then take your time to consider this, 5 seconds might seem a short time on paper or when testing a device but if hundreds of people will use the device multiple times a day the cumulative loss of time might be significant.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 2723-2731). Auerbach Publications. Kindle Edition. and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.
and http://www.biometric-solutions.com/index.php?story=performance_biometrics

QUESTION 203
In the context of Biometric authentication, what is a quick way to compare the accuracy of devices. In general, the device that have the lowest value would be the most accurate. Which of the following would be used to compare accuracy of devices?

A. the CER is used.
B. the FRR is used
C. the FAR is used
D. the FER is used

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
equal error rate or crossover error rate (EER or CER): the rate at which both accept and reject errors are equal. The value of the EER can be easily obtained from the ROC curve. The EER is a quick way to compare the accuracy of devices with different ROC curves. In general, the device with the lowest EER is most accurate.

In the context of Biometric Authentication almost all types of detection permit a system's sensitivity to be increased or decreased during an inspection process. If the system's sensitivity is increased, such as in an airport metal detector, the system becomes increasingly selective and has a higher False Reject Rate (FRR).

Conversely, if the sensitivity is decreased, the False Acceptance Rate (FAR) will increase.
Thus, to have a valid measure of the system performance, the CrossOver Error Rate (CER) is used.

The following are used as performance metrics for biometric systems:

false accept rate or false match rate (FAR or FMR): the probability that the system incorrectly matches the input pattern to a non-matching template in the database. It measures the percent of invalid inputs which are incorrectly accepted. In case of similarity scale, if the person is imposter in real, but the matching score is higher than the threshold, then he is treated as genuine that increase the FAR and hence performance also depends upon the selection of threshold value.

false reject rate or false non-match rate (FRR or FNMR): the probability that the system fails to detect a match between the input pattern and a matching template in the database. It measures the percent of valid inputs which are incorrectly rejected.

failure to enroll rate (FTE or FER): the rate at which attempts to create a template from an input is unsuccessful. This is most commonly caused by low quality inputs.

failure to capture rate (FTC): Within automatic systems, the probability that the system fails to detect a biometric input when presented correctly.

template capacity: the maximum number of sets of data which can be stored in the system.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37.
and
Wikipedia at: https://en.wikipedia.org/wiki/Biometrics

QUESTION 204
Because all the secret keys are held and authentication is performed on the Kerberos TGS and the authentication servers, these servers are vulnerable to:

A. neither physical attacks nor attacks from malicious code.
B. physical attacks only
C. both physical attacks and attacks from malicious code.
D. physical attacks but not attacks from malicious code.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Since all the secret keys are held and authentication is performed on the Kerberos TGS and the authentication servers, these servers are vulnerable to both physical attacks and attacks from malicious code.

Because a client's password is used in the initiation of the Kerberos request for the service protocol, password guessing can be used to impersonate a client.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 42.

QUESTION 205
The throughput rate is the rate at which individuals, once enrolled, can be processed and identified or authenticated by a biometric system. Acceptable throughput rates are in the range of:

A. 100 subjects per minute.
B. 25 subjects per minute.
C. 10 subjects per minute.
D. 50 subjects per minute.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The throughput rate is the rate at which individuals, once enrolled, can be processed and identified or authenticated by a biometric system.

Acceptable throughput rates are in the range of 10 subjects per minute.

Things that may impact the throughput rate for some types of biometric systems may include:

A concern with retina scanning systems may be the exchange of body fluids on the eyepiece.

Another concern would be the retinal pattern that could reveal changes in a person's health, such as diabetes or high blood pressure.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 38.

QUESTION 206
In addition to the accuracy of the biometric systems, there are other factors that must also be considered:

A. These factors include the enrollment time and the throughput rate, but not acceptability.
B. These factors do not include the enrollment time, the throughput rate, and acceptability.
C. These factors include the enrollment time, the throughput rate, and acceptability.
D. These factors include the enrollment time, but not the throughput rate, neither the acceptability.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
In addition to the accuracy of the biometric systems, there are other factors that must also be considered.

These factors include the enrollment time, the throughput rate, and acceptability.

Enrollment time is the time it takes to initially "register" with a system by providing samples of the biometric characteristic to be evaluated. An acceptable enrollment time is around two minutes.

For example, in fingerprint systems, the actual fingerprint is stored and requires approximately 250kb per finger for a high quality image. This level of information is required for one-to-many searches in forensics applications on very large databases.

In finger-scan technology, a full fingerprint is not stored-the features extracted from this fingerprint are stored using a small template that requires approximately 500 to 1000 bytes of storage. The original fingerprint cannot be reconstructed from this template.

Updates of the enrollment information may be required because some biometric characteristics, such as voice and signature, may change with time.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 37 & 38.

QUESTION 207
Which of the following biometric devices has the lowest user acceptance level?

A. Retina Scan
B. Fingerprint scan
C. Hand geometry
D. Signature recognition

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
According to the cited reference, of the given options, the Retina scan has the lowest user acceptance level as it is needed for the user to get his eye close to a device and it is not user friendly and very intrusive.

However, retina scan is the most precise with about one error per 10 millions usage.

Look at the 2 tables below. If necessary right click on the image and save it on your desktop for a larger view or visit the web site directly at https://sites.google.com/site/biometricsecuritysolutions/crossover-accuracy .
Biometric Comparison Chart

BIOMETRICS COMPARISON CHART

Biometric	Verify	ID	Accuracy	Reliability	Error Rate	Errors	False Pos	False Neg
Fingerprint	Yes	Yes	Very High	High	1 in 500+	dryness, dirt, age	Ext. Diff	Ext. Diff
Facial Recognition	Yes	No	High	Medium	no data	lighting, age, glasses, hair	Difficult	Easy
Hand Geometry	Yes	No	High	Medium	1 in 500	hand injury, age	Very Diff	Medium
Speaker Recognition	Yes	No	Medium	Low	1 in 50	noise, weather, colds	Medium	Easy
Iris Scan	Yes	Yes	Very High	High	1 in 131,000	poor lighting	Very Diff	Very Diff
Retinal Scan	Yes	Yes	Very High	High	1 in 10,000,000	glasses	Ext. Diff	Ext. Diff
Signature Recognition	Yes	No	Medium	Low	1 in 50	changing signatures	Medium	Easy
Keystroke Recognition	Yes	No	Low	Low	no data	hand injury, tiredness	Difficult	Easy
DNA	Yes	Yes	Very High	High	no data	none	Ext. Diff	Ext. Diff

Biometric	Security Level	Long-term Stability	User Acceptance	Intrusive	Ease of Use	Low Cost	Hardware	Standards
Fingerprint	High	High	Medium	Somewhat	High	Yes	Special, cheap	Yes
Facial Recognition	Medium	Medium	Medium	Non	Medium	Yes	Common, cheap	?
Hand Geometry	Medium	Medium	Medium	Non	High	No	Special, mid-price	?
Speaker Recognition	Medium	Medium	High	Non	High	Yes	Common, cheap	?
Iris Scan	High	High	Medium	Non	Medium	No	Special, expensive	?
Retinal Scan	High	High	Medium	Very	Low	No	Special, expensive	?
Signature Recognition	Medium	Medium	Medium	Non	High	Yes	Special, mid-price	?
Keystroke Recognition	Medium	Low	High	Non	High	Yes	Common, cheap	?
DNA	High	High	Low	Extremely	Low	No	Special, expensive	Yes

Aspect descriptions:

Verify	Whether or not the Biometric is capable of verification. Verification is the process where an input is compared to specific data previously recorded from the user to see if the person is who they claim to be.
ID	Whether or not the Biometric is capable of identification. Identification is the process where an input is compared to a large data set previously recorded from many peopleto see which person the user is.
Accuracy	How well the Biometric is able to tell individuals apart. This is partially determined by the amount of information gathered as well as the number of possible different data results.
Reliability	How dependable the Biometric is for recognition purposes.
Error Rate	This is calculated as the crossing point when graphed of false positives and false negtives created using this Biometric.
Errors	Typical causes of errors for this Biometric.
False Pos.	How easy it is to create a false positive reading with this biometric (someone is able to impersonate someone else).
False Neg.	How easy it is to create a false negative reading with this biometric (someone is able to avoid identification as oneself).
Security Level	The highest level of security that this Biometric is capable of working at.
Long-term Stability	How well this Biometric continues to work without data updates over long periods of time.
User Acceptance	How willing the public is to use this Biometric.
Intrusiveness	How much the Biometric is consdered to invade one's privacy or require interaction by the user.
Ease of Use	How easy this Biometric is for both the user and the personnel involved.
Low Cost	Whether or not there is a low-cost option for this Biometric to be used.
Hardware	Type and cost of hardware required to use this Biometric.
Standards	Whether or not standards exist for this Biometric.

Biometric Aspect Descriptions

Reference(s) used for this question:

RHODES, Keith A., Chief Technologist, United States General Accounting Office, National Preparedness, Technologies to Secure Federal Buildings, April 2002 (page 10).
and
https://sites.google.com/site/biometricsecuritysolutions/crossover-accuracy

QUESTION 208
Which of the following would be an example of the best password?

A. golf001
B. Elizabeth
C. T1me4g0lF
D. password

Correct Answer: C
Section: Access Control

Explanation
Explanation/Reference:
The best passwords are those that are both easy to remember and hard to crack using a dictionary attack. The best way to create passwords that fulfil both criteria is to use two small unrelated words or phonemes, ideally with upper and lower case characters, a special character, and/or a number. Shouldn't be used: common names, DOB, spouse, phone numbers, words found in dictionaries or system defaults. Source: ROTHKE, Ben, CISSP CBK Review presentation on domain 1.

QUESTION 209
A network-based vulnerability assessment is a type of test also referred to as:

A. An active vulnerability assessment.
B. A routing vulnerability assessment.
C. A host-based vulnerability assessment.
D. A passive vulnerability assessment.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
A network-based vulnerability assessment tool/system either re-enacts system attacks, noting and recording responses to the attacks, or probes different targets to infer weaknesses from their responses.

Since the assessment is actively attacking or scanning targeted systems, network-based vulnerability assessment systems are also called active vulnerability systems.

There are mostly two main types of test:

PASSIVE: You don't send any packet or interact with the remote target. You make use of public database and other techniques to gather information about your target.

ACTIVE: You do send packets to your target, you attempt to stimulate response which will help you in gathering information about hosts that are alive, services runnings, port state, and more.

See example below of both types of attacks:
Eavesdropping and sniffing data as it passes over a network are considered passive attacks because the attacker is not affecting the protocol, algorithm, key, message, or any parts of the encryption system. Passive attacks are hard to detect, so in most cases methods are put in place to try to prevent them rather than to detect and stop them.

Altering messages , modifying system files, and masquerading as another individual are acts that are considered active attacks because the attacker is actually doing something instead of sitting back and gathering data. Passive attacks are usually used to gain information prior to carrying out an active attack.

IMPORTANT NOTE:
On the commercial vendors will sometimes use different names for different types of scans. However, the exam is product agnostic. They do not use vendor terms but general terms. Experience could trick you into selecting the wrong choice sometimes. See feedback from Jason below:

"I am a system security analyst. It is my daily duty to perform system vulnerability analysis. We use Nessus and Retina (among other tools) to perform our network based vulnerability scanning. Both commercially available tools refer to a network based vulnerability scan as a "credentialed" scan. Without credentials, the scan tool cannot login to the system being scanned, and as such will only receive a port scan to see what ports are open and exploitable"

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 865). McGraw-Hill. Kindle Edition.
and
DUPUIS, Clement, Access Control Systems and Methodology CISSP Open Study Guide, version 1.0, march 2002 (page 97).

QUESTION 210
Which of the following is NOT a form of detective administrative control?

A. Rotation of duties
B. Required vacations
C. Separation of duties
D. Security reviews and audits

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Detective administrative controls warn of administrative control violations. Rotation of duties, required vacations and security reviews and audits are forms of detective administrative controls. Separation of duties is the practice of dividing the steps in a system function among different individuals, so as to keep a single individual from subverting the process, thus a preventive control rather than a detective control.
Source: DUPUIS, Cl?ment, Access Control Systems and Methodology CISSP Open Study Guide, version 1.0 (march 2002).

QUESTION 211
Which TCSEC level is labeled Controlled Access Protection?

A. C1

B. C2
C. C3
D. B1

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
C2 is labeled Controlled Access Protection.

The TCSEC defines four divisions: D, C, B and A where division A has the highest security.

Each division represents a significant difference in the trust an individual or organization can place on the evaluated system. Additionally divisions C, B and A are broken into a series of hierarchical subdivisions called classes: C1, C2, B1, B2, B3 and A1.

Each division and class expands or modifies as indicated the requirements of the immediately prior division or class.
D — Minimal protection

Reserved for those systems that have been evaluated but that fail to meet the requirements for a higher division

C — Discretionary protection

C1 — Discretionary Security Protection
Identification and authentication
Separation of users and data
Discretionary Access Control (DAC) capable of enforcing access limitations on an individual basis
Required System Documentation and user manuals
C2 — Controlled Access Protection
More finely grained DAC
Individual accountability through login procedures
Audit trails
Object reuse
Resource isolation

B — Mandatory protection

B1 — Labeled Security Protection

Informal statement of the security policy model
Data sensitivity labels
Mandatory Access Control (MAC) over selected subjects and objects
Label exportation capabilities
All discovered flaws must be removed or otherwise mitigated
Design specifications and verification
B2 — Structured Protection

Security policy model clearly defined and formally documented
DAC and MAC enforcement extended to all subjects and objects
Covert storage channels are analyzed for occurrence and bandwidth
Carefully structured into protection-critical and non-protection-critical elements
Design and implementation enable more comprehensive testing and review
Authentication mechanisms are strengthened
Trusted facility management is provided with administrator and operator segregation
Strict configuration management controls are imposed
B3 — Security Domains
Satisfies reference monitor requirements
Structured to exclude code not essential to security policy enforcement
Significant system engineering directed toward minimizing complexity
Security administrator role defined
Audit security-relevant events
Automated imminent intrusion detection, notification, and response
Trusted system recovery procedures
Covert timing channels are analyzed for occurrence and bandwidth
An example of such a system is the XTS-300, a precursor to the XTS-400

A — Verified protection

A1 — Verified Design
Functionally identical to B3
Formal design and verification techniques including a formal top-level specification
Formal management and distribution procedures
An example of such a system is Honeywell's Secure Communications Processor SCOMP, a precursor to the XTS-400
Beyond A1
System Architecture demonstrates that the requirements of self-protection and completeness for reference monitors have been implemented in the Trusted Computing Base (TCB).
Security Testing automatically generates test-case from the formal top-level specification or formal lower-level specifications.

Formal Specification and Verification is where the TCB is verified down to the source code level, using formal verification methods where feasible. Trusted Design Environment is where the TCB is designed in a trusted facility with only trusted (cleared) personnel.

The following are incorrect answers:

C1 is Discretionary security
C3 does not exists, it is only a detractor
B1 is called Labeled Security Protection.

Reference(s) used for this question:

HARE, Chris, Security management Practices CISSP Open Study Guide, version 1.0, april 1999.

and
AIOv4 Security Architecture and Design (pages 357 - 361)
AIOv5 Security Architecture and Design (pages 358 - 362)

QUESTION 212
Which security model is based on the military classification of data and people with clearances?

A. Brewer-Nash model
B. Clark-Wilson model
C. Bell-LaPadula model
D. Biba model

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The Bell-LaPadula model is a confidentiality model for information security based on the military classification of data, on people with clearances and data with a classification or sensitivity model. The Biba, Clark-Wilson and Brewer-Nash models are concerned with integrity. Source: HARE, Chris, Security Architecture and Models, Area 6 CISSP Open Study Guide, January 2002.

QUESTION 213
What mechanism automatically causes an alarm originating in a data center to be transmitted over the local municipal fire or police alarm circuits for relaying to both the local police/fire station and the appropriate headquarters?

A. Central station alarm
B. Proprietary alarm
C. A remote station alarm
D. An auxiliary station alarm

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Auxiliary station alarms automatically cause an alarm originating in a data center to be transmitted over the local municipal fire or police alarm circuits for relaying to both the local police/fire station and the appropriate headquarters. They are usually Municipal Fire Alarm Boxes are installed at your business or building, they are wired directly into the fire station.

Central station alarms are operated by private security organizations. It is very similar to a proprietary alarm system (see below). However, the biggest difference is the monitoring and receiving of alarm is done off site at a central location manned by non staff members. It is a third party.

Proprietary alarms are similar to central stations alarms except that monitoring is performed directly on the protected property. This type of alarm is usually use to protect large industrials or commercial buildings. Each of the buildings in the same vincinity has their own alarm system, they are all wired together at a central location within one of the building acting as a common receiving point. This point is usually far away from the other building so it is not under the same danger. It is usually man 24 hours a day by a trained team who knows how to react under different conditions.

A remote station alarm is a direct connection between the signal-initiating device at the protected property and the signal-receiving device located at a remote station, such as the fire station or usually a monitoring service. This is the most popular type of implementation and the owner of the premise must pay a monthly monitoring fee. This is what most people use in their home where they get a company like ADT to receive the alarms on their behalf.

A remote system differs from an auxiliary system in that it does not use the municipal fire of police alarm circuits.

Reference(s) used for this question:

ANDRESS, Mandy, Exam Cram CISSP, Coriolis, 2001, Chapter 11: Physical Security (page 211).
and
Great presentation J.T.A. Stone on SlideShare

QUESTION 214
Which of the following does not apply to system-generated passwords?

A. Passwords are harder to remember for users.
B. If the password-generating algorithm gets to be known, the entire system is in jeopardy.

C. Passwords are more vulnerable to brute force and dictionary attacks.
D. Passwords are harder to guess for attackers.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Users tend to choose easier to remember passwords. System-generated passwords can provide stronger, harder to guess passwords. Since they are based on rules provided by the administrator, they can include combinations of uppercase/lowercase letters, numbers and special characters, making them less vulnerable to brute force and dictionary attacks. One danger is that they are also harder to remember for users, who will tend to write them down, making them more vulnerable to anyone having access to the user's desk. Another danger with system-generated passwords is that if the password-generating algorithm gets to be known, the entire system is in jeopardy.
Source: RUSSEL, Deborah & GANGEMI, G.T. Sr., Computer Security Basics, O'Reilly, July 1992 (page 64).

QUESTION 215
Which of the following is not a preventive login control?

A. Last login message
B. Password aging
C. Minimum password length
D. Account expiration

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The last login message displays the last login date and time, allowing a user to discover if their account was used by someone else. Hence, this is rather a detective control.
Source: RUSSEL, Deborah & GANGEMI, G.T. Sr., Computer Security Basics, O'Reilly, July 1992 (page 63).

QUESTION 216
Which of the following forms of authentication would most likely apply a digital signature algorithm to every bit of data that is sent from the claimant to the verifier?

A. Dynamic authentication
B. Continuous authentication
C. Encrypted authentication

D. Robust authentication

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Continuous authentication is a type of authentication that provides protection against impostors who can see, alter, and insert information passed between the claimant and verifier even after the claimant/verifier authentication is complete. These are typically referred to as active attacks, since they assume that the imposter can actively influence the connection between claimant and verifier. One way to provide this form of authentication is to apply a digital signature algorithm to every bit of data that is sent from the claimant to the verifier. There are other combinations of cryptography that can provide this form of authentication but current strategies rely on applying some type of cryptography to every bit of data sent. Otherwise, any unprotected bit would be suspect. Robust authentication relies on dynamic authentication data that changes with each authenticated session between a claimant and a verifier, but does not provide protection against active attacks. Encrypted authentication is a distracter.
Source: GUTTMAN, Barbara & BAGWILL, Robert, NIST Special Publication 800-xx, Internet Security Policy: A Technical Guide, Draft Version, May 25, 2000 (page 34).

QUESTION 217
Who first described the DoD multilevel military security policy in abstract, formal terms?

A. David Bell and Leonard LaPadula
B. Rivest, Shamir and Adleman
C. Whitfield Diffie and Martin Hellman
D. David Clark and David Wilson

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
It was David Bell and Leonard LaPadula who, in 1973, first described the DoD multilevel military security policy in abstract, formal terms. The Bell-LaPadula is a Mandatory Access Control (MAC) model concerned with confidentiality. Rivest, Shamir and Adleman (RSA) developed the RSA encryption algorithm. Whitfield Diffie and Martin Hellman published the Diffie-Hellman key agreement algorithm in 1976. David Clark and David Wilson developed the Clark-Wilson integrity model, more appropriate for security in commercial activities.
Source: RUSSEL, Deborah & GANGEMI, G.T. Sr., Computer Security Basics, O'Reilly, July 1992 (pages 78,109).

QUESTION 218
What is the most critical characteristic of a biometric identifying system?

A. Perceived intrusiveness
B. Storage requirements
C. Accuracy
D. Scalability

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Accuracy is the most critical characteristic of a biometric identifying verification system.

Accuracy is measured in terms of false rejection rate (FRR, or type I errors) and false acceptance rate (FAR or type II errors).

The Crossover Error Rate (CER) is the point at which the FRR equals the FAR and has become the most important measure of biometric system accuracy.
Source: TIPTON, Harold F. & KRAUSE, Micki, Information Security Management Handbook, 4th edition (volume 1), 2000, CRC Press, Chapter 1, Biometric Identification (page 9).

QUESTION 219
What is considered the most important type of error to avoid for a biometric access control system?

A. Type I Error
B. Type II Error
C. Combined Error Rate
D. Crossover Error Rate

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
When a biometric system is used for access control, the most important error is the false accept or false acceptance rate, or Type II error, where the system would accept an impostor.

A Type I error is known as the false reject or false rejection rate and is not as important in the security context as a type II error rate. A type one is when a valid company employee is rejected by the system and he cannot get access even thou it is a valid user.

The Crossover Error Rate (CER) is the point at which the false rejection rate equals the false acceptance rate if your would create a graph of Type I and Type II errors. The lower the CER the better the device would be.

The Combined Error Rate is a distracter and does not exist.
Source: TIPTON, Harold F. & KRAUSE, Micki, Information Security Management Handbook, 4th edition (volume 1), 2000, CRC Press, Chapter 1, Biometric Identification (page 10).

QUESTION 220
How can an individual/person best be identified or authenticated to prevent local masquarading attacks?

A. UserId and password
B. Smart card and PIN code
C. Two-factor authentication
D. Biometrics

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
The only way to be truly positive in authenticating identity for access is to base the authentication on the physical attributes of the persons themselves (i.e., biometric identification). Physical attributes cannot be shared, borrowed, or duplicated. They ensure that you do identify the person, however they are not perfect and they would have to be supplemented by another factor.

Some people are getting thrown off by the term Masquarade. In general, a masquerade is a disguise. In terms of communications security issues, a masquerade is a type of attack where the attacker pretends to be an authorized user of a system in order to gain access to it or to gain greater privileges than they are authorized for. A masquerade may be attempted through the use of stolen logon IDs and passwords, through finding security gaps in programs, or through bypassing the authentication mechanism. Spoofing is another term used to describe this type of attack as well.

A UserId only provides for identification.

A password is a weak authentication mechanism since passwords can be disclosed, shared, written down, and more.

A smart card can be stolen and its corresponding PIN code can be guessed by an intruder. A smartcard can be borrowed by a friend of yours and you would have no clue as to who is really logging in using that smart card.

Any form of two-factor authentication not involving biometrics cannot be as reliable as a biometric system to identify the person.

Biometric identifying verification systems control people. If the person with the correct hand, eye, face, signature, or voice is not present, the identification and verification cannot take place and the desired action (i.e., portal passage, data, or resource access) does not occur.

As has been demonstrated many times, adversaries and criminals obtain and successfully use access cards, even those that require the addition of a PIN. This is because these systems control only pieces of plastic (and sometimes information), rather than people. Real asset and resource protection can only be accomplished by people, not cards and information, because unauthorized persons can (and do) obtain the cards and information.

Further, life-cycle costs are significantly reduced because no card or PIN administration system or personnel are required. The authorized person does not lose physical characteristics (i.e., hands, face, eyes, signature, or voice), but cards and PINs are continuously lost, stolen, or forgotten. This is why card access systems require systems and people to administer, control, record, and issue (new) cards and PINs. Moreover, the cards are an expensive and recurring cost.

NOTE FROM CLEMENT:
This question has been generating lots of interest. The keyword in the question is: Individual (the person) and also the authenticated portion as well.

I totally agree with you that Two Factors or Strong Authentication would be the strongest means of authentication. However the question is not asking what is the strongest mean of authentication, it is asking what is the best way to identify the user (individual) behind the technology. When answering questions do not make assumptions to facts not presented in the question or answers.

Nothing can beat Biometrics in such case. You cannot lend your fingerprint and pin to someone else, you cannot borrow one of my eye balls to defeat the Iris or Retina scan. This is why it is the best method to authenticate the user.

I think the reference is playing with semantics and that makes it a bit confusing. I have improved the question to make it a lot clearer and I have also improve the explanations attached with the question.

The reference mentioned above refers to authenticating the identity for access. So the distinction is being made that there is identity and there is authentication. In the case of physical security the enrollment process is where the identity of the user would be validated and then the biometrics features provided by the user would authenticate the user on a one to one matching basis (for authentication) with the reference contained in the database of biometrics templates. In the case of system access, the user might have to provide a username, a pin, a passphrase, a smart card, and then provide his biometric attributes.

Biometric can also be used for Identification purpose where you do a one to many match. You take a facial scan of someone within an airport and you attempt to match it with a large database of known criminal and terrorists. This is how you could use biometric for Identification.

There are always THREE means of authentication, they are:

Something you know (Type 1)
Something you have (Type 2)
Something you are (Type 3)

Reference(s) used for this question:

TIPTON, Harold F. & KRAUSE, Micki, Information Security Management Handbook, 4th edition (volume 1) , 2000, CRC Press, Chapter 1, Biometric Identification (page 7).
and
Search Security at http://searchsecurity.techtarget.com/definition/masquerade

QUESTION 221
Which authentication technique best protects against hijacking?

A. Static authentication
B. Continuous authentication
C. Robust authentication
D. Strong authentication

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
A continuous authentication provides protection against impostors who can see, alter, and insert information passed between the claimant and verifier even after the claimant/verifier authentication is complete. This is the best protection against hijacking. Static authentication is the type of authentication provided by traditional password schemes and the strength of the authentication is highly dependent on the difficulty of guessing passwords. The robust authentication mechanism relies on dynamic authentication data that changes with each authenticated session between a claimant and a verifier, and it does not protect against hijacking. Strong authentication refers to a two-factor authentication (like something a user knows and something a user is).
Source: TIPTON, Harold F. & KRAUSE, Micki, Information Security Management Handbook, 4th edition (volume 1), 2000, CRC Press, Chapter 3: Secured Connections to External Networks (page 51).

QUESTION 222
Which of the following is not a security goal for remote access?

A. Reliable authentication of users and systems
B. Protection of confidential data
C. Easy to manage access control to systems and network resources
D. Automated login for remote users

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
An automated login function for remote users would imply a weak authentication, thus certainly not a security goal.
Source: TIPTON, Harold F. & KRAUSE, Micki, Information Security Management Handbook, 4th edition, volume 2, 2001, CRC Press, Chapter 5: An Introduction to Secure Remote Access (page 100).

QUESTION 223
Which of the following questions is less likely to help in assessing identification and authentication controls?

A. Is a current list maintained and approved of authorized users and their access?
B. Are passwords changed at least every ninety days or earlier if needed?
C. Are inactive user identifications disabled after a specified period of time?
D. Is there a process for reporting incidents?

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Identification and authentication is a technical measure that prevents unauthorized people (or unauthorized processes) from entering an IT system. Access control usually requires that the system be able to identify and differentiate among users. Reporting incidents is more related to incident response capability (operational control) than to identification and authentication (technical control).
Source: SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (Pages A30 to A-32).

QUESTION 224
Which of the following questions is less likely to help in assessing physical access controls?

A. Does management regularly review the list of persons with physical access to sensitive facilities?
B. Is the operating system configured to prevent circumvention of the security software and application controls?
C. Are keys or other access devices needed to enter the computer room and media library?
D. Are visitors to sensitive areas signed in and escorted?

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:

Physical security and environmental security are part of operational controls, and are measures taken to protect systems, buildings, and related supporting infrastructures against threats associated with their physical environment. All the questions above are useful in assessing physical access controls except for the one regarding operating system configuration, which is a logical access control.
Source: SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (Pages A21 to A-24).

QUESTION 225
Which of the following questions is less likely to help in assessing physical and environmental protection?

A. Are entry codes changed periodically?
B. Are appropriate fire suppression and prevention devices installed and working?
C. Are there processes to ensure that unauthorized individuals cannot read, copy, alter, or steal printed or electronic information?
D. Is physical access to data transmission lines controlled?

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Physical security and environmental security are part of operational controls, and are measures taken to protect systems, buildings, and related supporting infrastructures against threats associated with their physical environment. All the questions above are useful in assessing physical and environmental protection except for the one regarding processes that ensuring that unauthorized individuals cannot access information, which is more a production control.
Source: SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (Pages A21 to A-24).

QUESTION 226
How would nonrepudiation be best classified as?

A. A preventive control
B. A logical control
C. A corrective control
D. A compensating control

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Systems accountability depends on the ability to ensure that senders cannot deny sending information and that receivers cannot deny receiving it. Because the mechanisms implemented in nonrepudiation prevent the ability to successfully repudiate an action, it can be considered as a preventive control.
Source: STONEBURNER, Gary, NIST Special Publication 800-33: Underlying Technical Models for Information Technology Security, National Institute of Standards and Technology, December 2001, page 7.

QUESTION 227
Why should batch files and scripts be stored in a protected area?

A. Because of the least privilege concept.
B. Because they cannot be accessed by operators.
C. Because they may contain credentials.D. Because of the need-to-know concept.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Because scripts contain credentials, they must be stored in a protected area and the transmission of the scripts must be dealt with carefully. Operators might need access to batch files and scripts. The least privilege concept requires that each subject in a system be granted the most restrictive set of privileges needed for the performance of authorized tasks. The need-to-know principle requires a user having necessity for access to, knowledge of, or possession of specific information required to perform official tasks or services.
Source: WALLHOFF, John, CISSP Summary 2002, April 2002, CBK#1 Access Control System & Methodology (page 3)

QUESTION 228
Which of the following Kerberos components holds all users' and services' cryptographic keys?

A. The Key Distribution Service
B. The Authentication Service
C. The Key Distribution Center
D. The Key Granting Service

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:

The Key Distribution Center (KDC) holds all users' and services' cryptographic keys. It provides authentication services, as well as key distribution functionality. The Authentication Service is the part of the KDC that authenticates a principal. The Key Distribution Service and Key Granting Service are distracters and are not defined Kerberos components.
Source: WALLHOFF, John, CISSP Summary 2002, April 2002, CBK#1 Access Control System & Methodology (page 3)

QUESTION 229
Sensitivity labels are an example of what application control type?

A. Preventive security controls
B. Detective security controls
C. Compensating administrative controls
D. Preventive accuracy controls

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Sensitivity labels are a preventive security application controls, such as are firewalls, reference monitors, traffic padding, encryption, data classification, one-time passwords, contingency planning, separation of development, application and test environments.

The incorrect answers are:

Detective security controls - Intrusion detection systems (IDS), monitoring activities, and audit trails.

Compensating administrative controls - There no such application control.

Preventive accuracy controls - data checks, forms, custom screens, validity checks, contingency planning, and backups.

Sources:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 264).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 7: Application Controls, Figure 7.1 (page 360).

QUESTION 230
Which integrity model defines a constrained data item, an integrity verification procedure and a transformation procedure?

A. The Take-Grant model
B. The Biba integrity model
C. The Clark Wilson integrity model
D. The Bell-LaPadula integrity model

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The Clark Wilson integrity model addresses the three following integrity goals: 1) data is protected from modification by unauthorized users; 2) data is protected from unauthorized modification by authorized users; and 3) data is internally and externally consistent. It also defines a Constrained Data Item (CDI), an Integrity Verification Procedure (IVP), a Transformation Procedure (TP) and an Unconstrained Data item. The Bell-LaPadula and Take-Grant models are not integrity models.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architecture and Models (page 205).

QUESTION 231
How should a doorway of a manned facility with automatic locks be configured?

A. It should be configured to be fail-secure.
B. It should be configured to be fail-safe.
C. It should have a door delay cipher lock.
D. It should not allow piggybacking.

Correct Answer: B

Section: Access Control
Explanation

Explanation/Reference:
Access controls are meant to protect facilities and computers as well as people.

In some situations, the objectives of physical access controls and the protection of people's lives may come into conflict. In theses situations, a person's life always takes precedence.

Many physical security controls make entry into and out of a facility hard, if not impossible. However, special consideration needs to be taken when this could affect lives. In an information processing facility, different types of locks can be used and piggybacking should be prevented, but the issue here with automatic locks is that they can either be configured as fail-safe or fail-secure.

Since there should only be one access door to an information processing facility, the automatic lock to the only door to a man-operated room must be configured to allow people out in case of emergency, hence to be fail-safe (sometimes called fail-open), meaning that upon fire alarm activation or electric power failure, the locking device unlocks. This is because the solenoid that maintains power to the lock to keep it in a locked state fails and thus opens or unlocks the electronic lock.

Fail Secure works just the other way. The lock device is in a locked or secure state with no power applied. Upon authorized entry, a solinoid unlocks the lock temporarily. Thus in a Fail Secure lock, loss of power of fire alarm activation causes the lock to remain in a secure mode.

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 451). McGraw-Hill. Kindle Edition.
and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 20249-20251). Auerbach Publications. Kindle Edition.

QUESTION 232
Which of following is not a service provided by AAA servers (Radius, TACACS and DIAMETER)?

A. Authentication
B. Administration
C. Accounting
D. Authorization

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Radius, TACACS and DIAMETER are classified as authentication, authorization, and accounting (AAA) servers.
Source: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 2, 2001, CRC Press, NY, Page 33.

also see:
The term "AAA" is often used, describing cornerstone concepts [of the AIC triad] Authentication, Authorization, and Accountability. Left out of the AAA acronym is Identification which is required before the three "A's" can follow. Identity is a claim, Authentication proves an identity, Authorization describes the action you can perform on a system once you have been identified and authenticated, and accountability holds users accountable for their actions. Reference: CISSP Study Guide, Conrad Misenar, Feldman p. 10-11, (c) 2010 Elsevier.

QUESTION 233
In response to Access-request from a client such as a Network Access Server (NAS), which of the following is not one of the response from a RADIUS Server?

A. Access-Accept
B. Access-Reject
C. Access-Granted
D. Access-Challenge

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
In response to an access-request from a client, a RADIUS server returns one of three authentication responses: access-accept, access-reject, or access-challenge, the latter being a request for additional authentication information such as a one-time password from a token or a callback identifier.
Source: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 2, 2001, CRC Press, NY, page 36.

QUESTION 234
Which of the following statements pertaining to RADIUS is incorrect:

A. A RADIUS server can act as a proxy server, forwarding client requests to other authentication domains.
B. Most of RADIUS clients have a capability to query secondary RADIUS servers for redundancy.
C. Most RADIUS servers have built-in database connectivity for billing and reporting purposes.
D. Most RADIUS servers can work with DIAMETER servers.

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
This is the correct answer because it is FALSE.

Diameter is an AAA protocol, AAA stands for authentication, authorization and accounting protocol for computer networks, and it is a successor to RADIUS.

The name is a pun on the RADIUS protocol, which is the predecessor (a diameter is twice the radius).

The main differences are as follows:

- Reliable transport protocols (TCP or SCTP, not UDP)
  - The IETF is in the process of standardizing TCP Transport for RADIUS
- Network or transport layer security (IPsec or TLS)
  - The IETF is in the process of standardizing Transport Layer Security for RADIUS
- Transition support for RADIUS, although Diameter is not fully compatible with RADIUS
- Larger address space for attribute-value pairs (AVPs) and identifiers (32 bits instead of 8 bits)
- Client–server protocol, with exception of supporting some server-initiated messages as well
- Both stateful and stateless models can be used
- Dynamic discovery of peers (using DNS SRV and NAPTR)
- Capability negotiation
- Supports application layer acknowledgements, defines failover methods and state machines (RFC 3539)
- Error notification
- Better roaming support
- More easily extended; new commands and attributes can be defined
- Aligned on 32-bit boundaries
- Basic support for user-sessions and accounting

A Diameter Application is not a software application, but a protocol based on the Diameter base protocol (defined in RFC 3588). Each application is defined by an application identifier and can add new command codes and/or new mandatory AVPs. Adding a new optional AVP does not require a new application.

Examples of Diameter applications:

- Diameter Mobile IPv4 Application (MobileIP, RFC 4004)
- Diameter Network Access Server Application (NASREQ, RFC 4005)
- Diameter Extensible Authentication Protocol (EAP) Application (RFC 4072)
- Diameter Credit-Control Application (DCCA, RFC 4006)
- Diameter Session Initiation Protocol Application (RFC 4740)
- Various applications in the 3GPP IP Multimedia Subsystem

All of the other choices presented are true. So Diameter is backwork compatible with Radius (to some extent) but the opposite is false.

Reference(s) used for this question:

TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 2, 2001, CRC Press, NY, Page 38.
and
https://secure.wikimedia.org/wikipedia/en/wiki/Diameter_%28protocol%29

QUESTION 235
Which of the following is used by RADIUS for communication between clients and servers?

A. TCP

B. SSL C. UDP
D. SSH

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 2, 2001, CRC Press, NY, Page 33.

QUESTION 236
Which of the following protocol was used by the INITIAL version of the Terminal Access Controller Access Control System TACACS for communication between clients and servers?

A. TCP
B. SSL
C. UDP
D. SSH

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
The original TACACS, developed in the early ARPANet days, had very limited functionality and used the UDP transport. In the early 1990s, the protocol was extended to include additional functionality and the transport changed to TCP.

TACACS is defined in RFC 1492, and uses (either TCP or UDP) port 49 by default. TACACS allows a client to accept a username and password and send a query to a TACACS authentication server, sometimes called a TACACS daemon or simply TACACSD. TACACSD uses TCP and usually runs on port 49. It would determine whether to accept or deny the authentication request and send a response back.
TACACS+

TACACS+ and RADIUS have generally replaced TACACS and XTACACS in more recently built or updated networks. TACACS+ is an entirely new protocol and is not compatible with TACACS or XTACACS. TACACS+ uses the Transmission Control Protocol (TCP) and RADIUS uses the User Datagram Protocol (UDP). Since TCP is connection oriented protocol, TACACS+ does not have to implement transmission control. RADIUS, however, does have to detect and correct transmission errors like packet loss, timeout etc. since it rides on UDP which is connectionless.

RADIUS encrypts only the users' password as it travels from the RADIUS client to RADIUS server. All other information such as the username, authorization, accounting are transmitted in clear text. Therefore it is vulnerable to different types of attacks. TACACS+ encrypts all the information mentioned above and therefore does not have the vulnerabilities present in the RADIUS protocol.

RADIUS and TACACS + are client/ server protocols, which means the server portion cannot send unsolicited commands to the client portion. The server portion can only speak when spoken to. Diameter is a peer-based protocol that allows either end to initiate communication. This functionality allows the Diameter server to send a message to the access server to request the user to provide another authentication credential if she is attempting to access a secure resource.

Reference(s) used for this question:
http://en.wikipedia.org/wiki/TACACS
and
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 239). McGraw-Hill. Kindle Edition.

QUESTION 237
Which of the following can best eliminate dial-up access through a Remote Access Server as a hacking vector?

A. Using a TACACS+ server.
B. Installing the Remote Access Server outside the firewall and forcing legitimate users to authenticate to the firewall.
C. Setting modem ring count to at least 5.
D. Only attaching modems to non-networked hosts.

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Containing the dial-up problem is conceptually easy: by installing the Remote Access Server outside the firewall and forcing legitimate users to authenticate to the firewall, any access to internal resources through the RAS can be filtered as would any other connection coming from the Internet.

The use of a TACACS+ Server by itself cannot eliminate hacking.

Setting a modem ring count to 5 may help in defeating war-dialing hackers who look for modem by dialing long series of numbers.

Attaching modems only to non-networked hosts is not practical and would not prevent these hosts from being hacked.
Source: STREBE, Matthew and PERKINS, Charles, Firewalls 24seven, Sybex 2000, Chapter 2: Hackers.

QUESTION 238
In the Bell-LaPadula model, the Star-property is also called:

A. The simple security property
B. The confidentiality property
C. The confinement property
D. The tranquility property

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
The Bell-LaPadula model focuses on data confidentiality and access to classified information, in contrast to the Biba Integrity Model which describes rules for the protection of data integrity.

In this formal model, the entities in an information system are divided into subjects and objects.

The notion of a "secure state" is defined, and it is proven that each state transition preserves security by moving from secure state to secure state, thereby proving that the system satisfies the security objectives of the model.

The Bell-LaPadula model is built on the concept of a state machine with a set of allowable states in a system. The transition from one state to another state is defined by transition functions.

A system state is defined to be "secure" if the only permitted access modes of subjects to objects are in accordance with a security policy.

To determine whether a specific access mode is allowed, the clearance of a subject is compared to the classification of the object (more precisely, to the combination of classification and set of compartments, making up the security level) to determine if the subject is authorized for the specific access mode.

The clearance/classification scheme is expressed in terms of a lattice. The model defines two mandatory access control (MAC) rules and one discretionary access control (DAC) rule with three security properties:

The Simple Security Property - a subject at a given security level may not read an object at a higher security level (no read-up).

The property (read "star"-property) - a subject at a given security level must not write to any object at a lower security level (no write-down). The property is also known as the Confinement property.

The Discretionary Security Property - use an access control matrix to specify the discretionary access control.

The transfer of information from a high-sensitivity document to a lower-sensitivity document may happen in the Bell-LaPadula model via the concept of trusted subjects. Trusted Subjects are not restricted by the property. Untrusted subjects are.

Trusted Subjects must be shown to be trustworthy with regard to the security policy. This security model is directed toward access control and is characterized by the phrase: "no read up, no write down." Compare the Biba model, the Clark-Wilson model and the Chinese Wall.

With Bell-LaPadula, users can create content only at or above their own security level (i.e. secret researchers can create secret or top-secret files but may not create public files; no write-down). Conversely, users can view content only at or below their own security level (i.e. secret researchers can view public or secret files, but may not view top-secret files; no read-up).

Strong Property

The Strong Property is an alternative to the Property in which subjects may write to objects with only a matching security level. Thus, the write-up operation permitted in the usual Property is not present, only a write-to-same level operation. The Strong Property is usually discussed in the context of multilevel database management systems and is motivated by integrity concerns.
Tranquility principle

The tranquility principle of the Bell-LaPadula model states that the classification of a subject or object does not change while it is being referenced. There are two forms to the tranquility principle: the "principle of strong tranquility" states that security levels do not change during the normal operation of the system and the "principle of weak tranquility" states that security levels do not change in a way that violates the rules of a given security policy.

Another interpretation of the tranquility principles is that they both apply only to the period of time during which an operation involving an object or subject is occurring. That is, the strong tranquility principle means that an object's security level/label will not change during an operation (such as read or write); the weak tranquility principle means that an object's security level/label may change in a way that does not violate the security policy during an operation.

Reference(s) used for this question:
http://en.wikipedia.org/wiki/Biba_Model
http://en.wikipedia.org/wiki/Mandatory_access_control
http://en.wikipedia.org/wiki/Discretionary_access_control http://en.wikipedia.org/wiki/Clark-Wilson_model http://en.wikipedia.org/wiki/Brewer_and_Nash_model

QUESTION 239

An attack initiated by an entity that is authorized to access system resources but uses them in a way not approved by those who granted the authorization is known as a(n):

A. active attack
B. outside attack
C. inside attack
D. passive attack

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
An inside attack is an attack initiated by an entity inside the security perimeter, an entity that is authorized to access system resources but uses them in a way not approved by those who granted the authorization whereas an outside attack is initiated from outside the perimeter, by an unauthorized or illegitimate user of the system. An active attack attempts to alter system resources to affect their operation and a passive attack attempts to learn or make use of the information from the system but does not affect system resources.
Source: SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 240
Which of the following can be defined as a framework that supports multiple, optional authentication mechanisms for PPP, including cleartext passwords, challenge-response, and arbitrary dialog sequences?

A. Extensible Authentication Protocol
B. Challenge Handshake Authentication Protocol
C. Remote Authentication Dial-In User Service
D. Multilevel Authentication Protocol.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
RFC 2828 (Internet Security Glossary) defines the Extensible Authentication Protocol as a framework that supports multiple, optional authentication mechanisms for PPP, including cleartext passwords, challenge-response, and arbitrary dialog sequences. It is intended for use primarily by a host or router that connects to a PPP network server via switched circuits or dial-up lines. The Remote Authentication Dial-In User Service (RADIUS) is defined as an Internet protocol for carrying dial-in user's authentication information and configuration information between a shared, centralized authentication server and a network access server that needs

to authenticate the users of its network access ports. The other option is a distracter. Source: SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 241
What is a common problem when using vibration detection devices for perimeter control?

A. They are vulnerable to non-adversarial disturbances.
B. They can be defeated by electronic means.
C. Signal amplitude is affected by weather conditions.
D. They must be buried below the frost line.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Vibration sensors are similar and are also implemented to detect forced entry. Financial institutions may choose to implement these types of sensors on exterior walls, where bank robbers may attempt to drive a vehicle through. They are also commonly used around the ceiling and flooring of vaults to detect someone trying to make an unauthorized bank withdrawal.

Such sensors are proned to false positive. If there is a large truck with heavy equipment driving by it may trigger the sensor. The same with a storm with thunder and lighting, it may trigger the alarm even thou there are no adversarial threat or disturbance.

The following are incorrect answers:

All of the other choices are incorrect.

Reference used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (pp. 495-496). McGraw-Hill . Kindle Edition.

QUESTION 242
Which of the following security controls might force an operator into collusion with personnel assigned organizationally within a different function in order to gain access to unauthorized data?

A. Limiting the local access of operations personnel
B. Job rotation of operations personnel
C. Management monitoring of audit logs
D. Enforcing regular password changes

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
The questions specifically said: "within a different function" which eliminate Job Rotation as a choice.

Management monitoring of audit logs is a detective control and it would not prevent collusion.

Changing passwords regularly would not prevent such attack.

This question validates if you understand the concept of separation of duties and least privilege. By having operators that have only the minimum access level they need and only what they need to do their duties within a company, the operations personnel would be force to use collusion to defeat those security mechanism. Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 243
What is the name of the first mathematical model of a multi-level security policy used to define the concept of a secure state, the modes of access, and rules for granting access?

A. Clark and Wilson Model
B. Harrison-Ruzzo-Ullman Model
C. Rivest and Shamir Model
D. Bell-LaPadula Model

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 244
Which of the following models does NOT include data integrity or conflict of interest?

A. Biba
B. Clark-Wilson
C. Bell-LaPadula
D. Brewer-Nash

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Bell LaPadula model (Bell 1975): The granularity of objects and subjects is not predefined, but the model prescribes simple access rights. Based on simple access restrictions the Bell LaPadula model enforces a discretionary access control policy enhanced with mandatory rules. Applications with rigid confidentiality requirements and without strong integrity requirements may properly be modeled.

These simple rights combined with the mandatory rules of the policy considerably restrict the spectrum of applications which can be appropriately modeled.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

Also check:
Proceedings of the IFIP TC11 12th International Conference on Information Security, Samos (Greece), May 1996, On Security Models.

QUESTION 245
What is the PRIMARY use of a password?

A. Allow access to files.
B. Identify the user.
C. Authenticate the user.
D. Segregate various user's accesses.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 246
The three classic ways of authenticating yourself to the computer security software are: something you know, something you have, and something:

A. you need.
B. you read.
C. you are.
D. you do.

Correct Answer: C
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 247
An access system that grants users only those rights necessary for them to perform their work is operating on which security principle?

A. Discretionary Access
B. Least Privilege
C. Mandatory Access
D. Separation of Duties

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 248
Pin, Password, Passphrases, Tokens, smart cards, and biometric devices are all items that can be used for Authentication. When one of these item listed above in conjunction with a second factor to validate authentication, it provides robust authentication of the individual by practicing which of the following?

A. Multi-party authentication
B. Two-factor authentication
C. Mandatory authentication
D. Discretionary authentication

Correct Answer: B
Section: Access Control
Explanation

Explanation/Reference:
Once an identity is established it must be authenticated. There exist numerous technologies and implementation of authentication methods however they almost all fall under three major areas.

There are three fundamental types of authentication:

Authentication by knowledge—something a person knows
Authentication by possession—something a person has
Authentication by characteristic—something a person is
Logical controls related to these types are called “factors.”

Something you know can be a password or PIN, something you have can be a token fob or smart card, and something you are is usually some form of biometrics.

Single-factor authentication is the employment of one of these factors, two-factor authentication is using two of the three factors, and three-factor authentication is the combination of all three factors.

The general term for the use of more than one factor during authentication is multifactor authentication or strong authentication.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 2367-2379). Auerbach Publications. Kindle Edition.

QUESTION 249
What is one disadvantage of content-dependent protection of information?

A. It increases processing overhead.
B. It requires additional password entry.
C. It exposes the system to data locking.
D. It limits the user's individual address space.

Correct Answer: A
Section: Access Control
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 250
Which of the following is most appropriate to notify an internal user that session monitoring is being conducted?

A. Logon Banners
B. Wall poster

C. Employee Handbook
D. Written agreement

Correct Answer: D
Section: Access Control
Explanation

Explanation/Reference:
This is a tricky question, the keyword in the question is Internal users.

There are two possible answers based on how the question is presented, this question could either apply to internal users or ANY anonymous/external users.

Internal users should always have a written agreement first, then logon banners serve as a constant reminder.

Banners at the log-on time should be used to notify external users of any monitoring that is being conducted. A good banner will give you a better legal stand and also makes it obvious the user was warned about who should access the system, who is authorized and unauthorized, and if it is an unauthorized user then he is fully aware of trespassing. Anonymous/External users, such as those logging into a web site, ftp server or even a mail server; their only notification system is the use of a logon banner.

References used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 50.
and
Shon Harris, CISSP All-in-one, 5th edition, pg 873

QUESTION 251
What mechanism does a system use to compare the security labels of a subject and an object?

A. Validation Module.
B. Reference Monitor.
C. Clearance Check.
D. Security Module.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Because the Reference Monitor is responsible for access control to the objects by the subjects it compares the security labels of a subject and an object.

According to the OIG: The reference monitor is an access control concept referring to an abstract machine that mediates all accesses to objects by subjects based on information in an access control database. The reference monitor must mediate all access, be protected from modification, be verifiable as correct, and must always be invoked. The reference monitor, in accordance with the security policy, controls the checks that are made in the access control database.

The following are incorrect:

Validation Module. A Validation Module is typically found in application source code and is used to validate data being inputted.

Clearance Check. Is a distractor, there is no such thing other than what someone would do when checking if someone is authorized to access a secure facility.

Security Module. Is typically a general purpose module that prerforms a variety of security related functions.

References:
OIG CBK, Security Architecture and Design (page 324)
AIO, 4th Edition, Security Architecture and Design, pp 328-328.
Wikipedia - http://en.wikipedia.org/wiki/Reference_monitor

QUESTION 252
As per the Orange Book, what are two types of system assurance?

A. Operational Assurance and Architectural Assurance.
B. Design Assurance and Implementation Assurance.
C. Architectural Assurance and Implementation Assurance.
D. Operational Assurance and Life-Cycle Assurance.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Are the two types of assurance mentioned in the Orange book.

The following answers are incorrect:

Operational Assurance and Architectural Assurance. Is incorrect because Architectural Assurance is not a type of assurance mentioned in the Orange book.

Design Assurance and Implementation Assurance. Is incorrect because neither are types of assurance mentioned in the Orange book.

Architectural Assurance and Implementation Assurance. Is incorrect because neither are types of assurance mentioned in the Orange book.

QUESTION 253
Which of the following are required for Life-Cycle Assurance?

A. System Architecture and Design specification.
B. Security Testing and Covert Channel Analysis.
C. Security Testing and Trusted distribution.
D. Configuration Management and Trusted Facility Management.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Security testing and trusted distribution are required for Life-Cycle Assurance.

The following answers are incorrect:

System Architecture and Design specification. Is incorrect because System Architecture is not requried for Life-Cycle Assurance.

Security Testing and Covert Channel Analysis. Is incorrect because Covert Channel Analysis is not requried for Life-Cycle Assurance.

Configuration Management and Trusted Facility Management. Is incorrect because Trusted Facility Management. is not requried for Life-Cycle Assurance.

QUESTION 254
Memory management in TCSEC levels B3 and A1 operating systems may utilize "data hiding". What does this mean?

A. System functions are layered, and none of the functions in a given layer can access data outside that layer.

B. Auditing processes and their memory addresses cannot be accessed by user processes.
C. Only security processes are allowed to write to ring zero memory.
D. It is a form of strong encryption cipher.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

Data Hiding is protecting data so that it is only available to higher levels this is done and is also performed by layering, when the software in each layer maintains its own global data and does not directly reference data outside its layers.

The following answers are incorrect:

Auditing processes and their memory addresses cannot be accessed by user processes. Is incorrect because this does not offer data hiding.

Only security processes are allowed to write to ring zero memory. This is incorrect, the security kernel would be responsible for this.

It is a form of strong encryption cipher. Is incorrect because this does not conform to the definition of data hiding.

QUESTION 255
What does "System Integrity" mean?

A. The software of the system has been implemented as designed.
B. Users can't tamper with processes they do not own.
C. Hardware and firmware have undergone periodic testing to verify that they are functioning properly.
D. Design specifications have been verified against the formal top-level specification.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
System Integrity means that all components of the system cannot be tampered with by unauthorized personnel and can be verified that they work properly.

The following answers are incorrect:

The software of the system has been implemented as designed. Is incorrect because this would fall under Trusted system distribution.

Users can't tamper with processes they do not own. Is incorrect because this would fall under Configuration Management.

Design specifications have been verified against the formal top-level specification. Is incorrect because this would fall under Specification and verification.

References:

AIOv3 Security Models and Architecture (pages 302 - 306)
DOD TCSEC - http://www.cerberussystems.com/INFOSEC/stds/d520028.htm

QUESTION 256

The Orange Book states that "Hardware and software features shall be provided that can be used to periodically validate the correct operation of the on-site hardware and firmware elements of the TCB [Trusted Computing Base]." This statement is the formal requirement for:

A. Security Testing.
B. Design Verification.
C. System Integrity.
D. System Architecture Specification.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
This is a requirement starting as low as C1 within the TCSEC rating.

The Orange book requires the following for System Integrity Hardware and/or software features shall be provided that can be used to periodically validate the correct operation of the on-site hardware and firmware elements of the TCB.

NOTE FROM CLEMENT:
This is a question that confuses a lot of people because most people take for granted that the orange book with its associated Bell LaPadula model has nothing to do with integrity. However you have to be careful about the context in which the word integrity is being used. You can have Data Integrity and you can have System Integrity which are two completely different things.

Yes, the Orange Book does not specifically address the Integrity requirements, however it has to run on top of systems that must meet some integrity requirements.

This is part of what they call operational assurance which is defined as a level of confidence of a trusted system's architecture and implementation that enforces the system's security policy. It includes:

System architecture
Covert channel analysis
System integrity
Trusted recovery

DATA INTEGRITY

Data Integrity is very different from System Integrity. When you have integrity of the data, there are three goals:
1. Prevent authorized users from making unauthorized modifications
2. Preven unauthorized users from making modifications

3. Maintaining internal and external consistancy of the data

Bell LaPadula which is based on the Orange Book address does not address Integrity, it addresses only Confidentiality.
Biba address only the first goal of integrity.
Clark-Wilson addresses the three goals of integrity.

In the case of this question, there is a system integrity requirement within the TCB. As mentioned above here is an extract of the requirements: Hardware and/or software features shall be provided that can be used to periodically validate the correct operation of the on-site hardware and firmware elements of the TCB.

The following answers are incorrect:

Security Testing. Is incorrect because Security Testing has no set of requirements in the Orange book.

Design Verification. Is incorrect because the Orange book's requirements for Design Verification include: A formal model of the security policy must be clearly identified and documented, including a mathematical proof that the model is consistent with its axioms and is sufficient to support the security policy.

System Architecture Specification. Is incorrect because there are no requirements for System Architecture Specification in the Orange book.

The following reference(s) were used for this question:

Trusted Computer Security Evaluation Criteria (TCSEC), DoD 5200.28-STD, page 15, 18, 25, 31, 40, 50.

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition, Security Architecture and Design, Page 392-397, for users with the Kindle Version see Kindle Locations 28504-28505.
and
DOD TCSEC - http://www.cerberussystems.com/INFOSEC/stds/d520028.htm

QUESTION 257
Which of the following can be used as a covert channel?

A. Storage and timing.
B. Storage and low bits.
C. Storage and permissions.
D. Storage and classification.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

The Orange book requires protection against two types of covert channels, Timing and Storage.

The following answers are incorrect:

Storage and low bits. Is incorrect because, low bits would not be considered a covert channel.
Storage and permissions. Is incorrect because, permissions would not be considered a covert channel.
Storage and classification. Is incorrect because, classification would not be considered a covert channel.

QUESTION 258
Configuration Management controls what?

A. Auditing of changes to the Trusted Computing Base.
B. Control of changes to the Trusted Computing Base.
C. Changes in the configuration access to the Trusted Computing Base.
D. Auditing and controlling any changes to the Trusted Computing Base.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
All of these are components of Configuration Management.

The following answers are incorrect:

Auditing of changes to the Trusted Computing Base. Is incorrect because it refers only to auditing the changes, but nothing about controlling them.

Control of changes to the Trusted Computing Base. Is incorrect because it refers only to controlling the changes, but nothing about ensuring the changes will not lead to a weakness or fault in the system.

Changes in the configuration access to the Trusted Computing Base. Is incorrect because this does not refer to controlling the changes or ensuring the changes will not lead to a weakness or fault in the system.

QUESTION 259
Which of the following exemplifies proper separation of duties?

A. Operators are not permitted modify the system time.
B. Programmers are permitted to use the system console.
C. Console operators are permitted to mount tapes and disks.

D. Tape operators are permitted to use the system console.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
This is an example of Separation of Duties because operators are prevented from modifying the system time which could lead to fraud. Tasks of this nature should be performed by they system administrators.

AIO defines Separation of Duties as a security principle that splits up a critical task among two or more individuals to ensure that one person cannot complete a risky task by himself.

The following answers are incorrect:

Programmers are permitted to use the system console. Is incorrect because programmers should not be permitted to use the system console, this task should be performed by operators. Allowing programmers access to the system console could allow fraud to occur so this is not an example of Separation of Duties..

Console operators are permitted to mount tapes and disks. Is incorrect because operators should be able to mount tapes and disks so this is not an example of Separation of Duties.

Tape operators are permitted to use the system console. Is incorrect because operators should be able to use the system console so this is not an example of Separation of Duties.

References:
OIG CBK Access Control (page 98 - 101)
AIOv3 Access Control (page 182)

QUESTION 260
The control of communications test equipment should be clearly addressed by security policy for which of the following reasons?

A. Test equipment is easily damaged.
B. Test equipment can be used to browse information passing on a network.
C. Test equipment is difficult to replace if lost or stolen.
D. Test equipment must always be available for the maintenance personnel.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Test equipment must be secured. There are equipment and other tools that if in the wrong hands could be used to "sniff" network traffic and also be used to commit fraud. The storage and use of this equipment should be detailed in the security policy for this reason.

The following answers are incorrect:

Test equipment is easily damaged. Is incorrect because it is not the best answer, and from a security point of view not relevent.

Test equipment is difficult to replace if lost or stolen. Is incorrect because it is not the best answer, and from a security point of view not relevent.

Test equipment must always be available for the maintenance personnel. Is incorrect because it is not the best answer, and from a security point of view not relevent.

References:
OIG CBK Operations Security (pages 642 - 643)

QUESTION 261
Who is ultimately responsible for the security of computer based information systems within an organization?

A. The tech support team
B. The Operation Team.
C. The management team.
D. The training team.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
If there is no support by management to implement, execute, and enforce security policies and procedure, then they won't work. Senior management must be involved in this because they have an obligation to the organization to protect the assests . The requirement here is for management to show “due diligence” in establishing an effective compliance, or security program.

The following answers are incorrect:

The tech support team. Is incorrect because the ultimate responsibility is with management for the security of computer-based information systems.

The Operation Team. Is incorrect because the ultimate responsibility is with management for the security of computer-based information systems.

The Training Team. Is incorrect because the ultimate responsibility is with management for the security of computer-based information systems.

Reference(s) used for this question:
OIG CBK Information Security Management and Risk Management (page 20 - 22)

QUESTION 262
The major objective of system configuration management is which of the following?

A. system maintenance.
B. system stability.
C. system operations.
D. system tracking.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A major objective with Configuration Management is stability. The changes to the system are controlled so that they don't lead to weaknesses or faults in th

system. The following answers are incorrect:

system maintenance. Is incorrect because it is not the best answer. Configuration Management does control the changes to the system but it is not as important as the overall stability of the system. system operations. Is incorrect because it is not the best answer, the overall stability of the system is much more important. system tracking. Is incorrect because while tracking changes is important, it is not the best answer. The overall stability of the system is much more important.

QUESTION 263
Which must bear the primary responsibility for determining the level of protection needed for information systems resources?

A. IS security specialists
B. Senior Management
C. Senior security analysts
D. systems Auditors

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

If there is no support by senior management to implement, execute, and enforce security policies and procedure, then they won't work. Senior management must be involved in this because they have an obligation to the organization to protect the assests . The requirement here is for management to show “due diligence” in establishing an effective compliance, or security program. It is senior management that could face legal repercussions if they do not have sufficient controls in place.

The following answers are incorrect:

IS security specialists. Is incorrect because it is not the best answer. Senior management bears the primary responsibility for determining the level of protection needed.

Senior security analysts. Is incorrect because it is not the best answer. Senior management bears the primary responsibility for determining the level of protection needed.

systems auditors. Is incorrect because it is not the best answer, system auditors are responsible that the controls in place are effective. Senior management bears the primary responsibility for determining the level of protection needed.

QUESTION 264
The security of a computer application is most effective and economical in which of the following cases?

A. The system is optimized prior to the addition of security.
B. The system is procured off-the-shelf.
C. The system is customized to meet the specific security threat.
D. The system is originally designed to provide the necessary security.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The earlier in the process that security is planned for and implement the cheaper it is. It is also much more efficient if security is addressed in each phase of the development cycle rather than an add-on because it gets more complicated to add at the end. If security plan is developed at the beginning it ensures that security won't be overlooked.

The following answers are incorrect:

The system is optimized prior to the addition of security. Is incorrect because if you wait to implement security after a system is completed the cost of adding security increases dramtically and can become much more complex.

The system is procured off-the-shelf. Is incorrect because it is often difficult to add security to off-the shelf systems.

The system is customized to meet the specific security threat. Is incorrect because this is a distractor. This implies only a single threat.

QUESTION 265
If an operating system permits shared resources such as memory to be used sequentially by multiple users/application or subjects without a refresh of the objects/ memory area, what security problem is MOST likely to exist?

A. Disclosure of residual data.
B. Unauthorized obtaining of a privileged execution state.
C. Data leakage through covert channels.
D. Denial of service through a deadly embrace.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Allowing objects to be used sequentially by multiple users without a refresh of the objects can lead to disclosure of residual data. It is important that steps be taken to eliminate the chance for the disclosure of residual data.

Object reuse refers to the allocation or reallocation of system resources to a user or, more appropriately, to an application or process. Applications and services on a computer system may create or use objects in memory and in storage to perform programmatic functions. In some cases, it is necessary to share these resources between various system applications. However, some objects may be employed by an application to perform privileged tasks on behalf of an authorized user or upstream application. If object usage is not controlled or the data in those objects is not erased after use, they may become available to unauthorized users or processes.

Disclosure of residual data and Unauthorized obtaining of a privileged execution state are both a problem with shared memory and resources. Not clearing the heap/stack can result in residual data and may also allow the user to step on somebody's session if the security token/identify was maintained in that space. This is generally more malicious and intentional than accidental though. The MOST common issue would be Disclosure of residual data.

The following answers are incorrect:

Unauthorized obtaining of a privileged execution state. Is incorrect because this is not a problem with Object Reuse.

Data leakage through covert channels. Is incorrect because it is not the best answer. A covert channel is a communication path. Data leakage would not be a problem created by Object Reuse. In computer security, a covert channel is a type of computer security attack that creates a capability to transfer information objects between processes that are not supposed to be allowed to communicate by the computer security policy. The term, originated in 1973 by Lampson is defined as "(channels) not intended for information transfer at all, such as the service program's effect on system load." to distinguish it from Legitimate channels that are subjected to access controls by COMPUSEC.

Denial of service through a deadly embrace. Is incorrect because it is only a detractor.

References:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 4174-4179). Auerbach Publications. Kindle Edition. and
https://www.fas.org/irp/nsa/rainbow/tg018.htm
and
http://en.wikipedia.org/wiki/Covert_channel

QUESTION 266
The Information Technology Security Evaluation Criteria (ITSEC) was written to address which of the following that the Orange Book did not address?

A. integrity and confidentiality.
B. confidentiality and availability.
C. integrity and availability.
D. none of the above.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
TCSEC focused on confidentiality while ITSEC added integrity and availability as security goals.

The following answers are incorrect:

integrity and confidentiality. Is incorrect because TCSEC addressed confidentiality.
confidentiality and availability. Is incorrect because TCSEC addressed confidentiality. none of the above. Is incorrect because ITSEC added integrity and availability as security goals.

QUESTION 267
An Architecture where there are more than two execution domains or privilege levels is called:

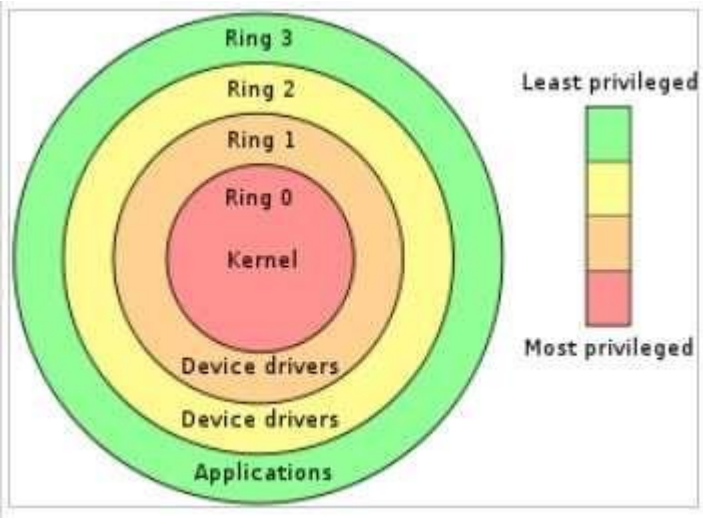
A. Ring Architecture.
B. Ring Layering
C. Network Environment.
D. Security Models

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In computer science, hierarchical protection domains, often called protection rings, are a mechanism to protect data and functionality from faults (fault tolerance) and malicious behavior (computer security). This approach is diametrically opposite to that of capability-based security.

Computer operating systems provide different levels of access to resources. A protection ring is one of two or more hierarchical levels or layers of privilege within the architecture of a computer system. This is generally hardware-enforced by some CPU architectures that provide different CPU modes at the hardware or microcode level. Rings are arranged in a hierarchy from most privileged (most trusted, usually numbered zero) to least privileged (least trusted, usually with the highest ring number). On most operating systems, Ring 0 is the level with the most privileges and interacts most directly with the physical hardware such as the CPU and memory.

Special gates between rings are provided to allow an outer ring to access an inner ring's resources in a predefined manner, as opposed to allowing arbitrary usage. Correctly gating access between rings can improve security by preventing programs from one ring or privilege level from misusing resources intended for programs in another. For example, spyware running as a user program in Ring 3 should be prevented from turning on a web camera without informing the user, since hardware access should be a Ring 1 function reserved for device drivers. Programs such as web browsers running in higher numbered rings must request access to the network, a resource restricted to a lower numbered ring. Ring Architecture



All of the other answers are incorrect because they are detractors.

References:
OIG CBK Security Architecture and Models (page 311) and
https://en.wikipedia.org/wiki/Ring_%28computer_security%29

QUESTION 268
Which of the following is commonly used for retrofitting multilevel security to a database management system?

A. trusted front-end.
B. trusted back-end.
C. controller.
D. kernel.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
If you are "retrofitting" that means you are adding to an existing database management system (DBMS). You could go back and redesign the entire DBMS but the cost of that could be expensive and there is no telling what the effect will be on existing applications, but that is redesigning and the question states retrofitting. The most cost effective way with the least effect on existing applications while adding a layer of security on top is through a trusted front-end.

Clark-Wilson is a synonym of that model as well. It was used to add more granular control or control to database that did not provide appropriate controls or no controls at all. It is one of the most popular model today. Any dynamic website with a back-end database is an example of this today.

Such a model would also introduce separation of duties by allowing the subject only specific rights on the objects they need to access.

The following answers are incorrect:

trusted back-end. Is incorrect because a trusted back-end would be the database management system (DBMS). Since the question stated "retrofitting" that eliminates this answer.

controller. Is incorrect because this is a distractor and has nothing to do with "retrofitting".

kernel. Is incorrect because this is a distractor and has nothing to do with "retrofitting". A security kernel would provide protection to devices and processes but would be inefficient in protecting rows or columns in a table.

QUESTION 269

Who can best decide what are the adequate technical security controls in a computer-based application system in regards to the protection of the data being used, the criticality of the data, and it's sensitivity level ?

A. System Auditor
B. Data or Information Owner
C. System Manager
D. Data or Information user

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The data or information owner also referred to as "Data Owner" would be the best person. That is the individual or officer who is ultimately responsible for the protection of the information and can therefore decide what are the adequate security controls according to the data sensitivity and data criticality. The auditor would be the best person to determine the adequacy of controls and whether or not they are working as expected by the owner.

The function of the auditor is to come around periodically and make sure you are doing what you are supposed to be doing. They ensure the correct controls are in place and are being maintained securely. The goal of the auditor is to make sure the organization complies with its own policies and the applicable laws and regulations.

Organizations can have internal auditors and/ or external auditors. The external auditors commonly work on behalf of a regulatory body to make sure compliance is being met. For example CobiT, which is a model that most information security auditors follow when evaluating a security program. While many security professionals fear and dread auditors, they can be valuable tools in ensuring the overall security of the organization. Their goal is to find the things you have missed and help you understand how to fix the problem.

The Official ISC2 Guide (OIG) says:
IT auditors determine whether users, owners, custodians, systems, and networks are in compliance with the security policies, procedures, standards, baselines, designs, architectures, management direction, and other requirements placed on systems. The auditors provide independent assurance to the management on the appropriateness of the security controls. The auditor examines the information systems and determines whether they are designed, configured, implemented, operated, and managed in a way ensuring that the organizational objectives are being achieved. The auditors provide top company management with an independent view of the controls and their effectiveness.

Example:
Bob is the head of payroll. He is therefore the individual with primary responsibility over the payroll database, and is therefore the information/data owner of the payroll database. In Bob's department, he has Sally and Richard working for him. Sally is responsible for making changes to the payroll database, for example if someone is hired or gets a raise. Richard is only responsible for printing paychecks. Given those roles, Sally requires both read and write access to the payroll

database, but Richard requires only read access to it. Bob communicates these requirements to the system administrators (the "information/data custodians") and they set the file permissions for Sally's and Richard's user accounts so that Sally has read/write access, while Richard has only read access.

So in short Bob will determine what controls are required, what is the sensitivily and criticality of the Data. Bob will communicate this to the custodians who will implement the requirements on the systems/DB. The auditor would assess if the controls are in fact providing the level of security the Data Owner expects within the systems/DB. The auditor does not determine the sensitivity of the data or the crititicality of the data.

The other answers are not correct because:

A "system auditor" is never responsible for anything but auditing... not actually making control decisions but the auditor would be the best person to determine the adequacy of controls and then make recommendations.

A "system manager" is really just another name for a system administrator, which is actually an information custodian as explained above.

A "Data or information user" is responsible for implementing security controls on a day-to-day basis as they utilize the information, but not for determining what the controls should be or if they are adequate.

References:
Official ISC2 Guide to the CISSP CBK, Third Edition , Page 477
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Information Security Governance and Risk Management ((ISC)2 Press) (Kindle Locations 294-298). Auerbach Publications. Kindle Edition.
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 3108-3114).

Information Security Glossary
Responsibility for use of information resources

QUESTION 270
A security evaluation report and an accreditation statement are produced in which of the following phases of the system development life cycle?

A. project initiation and planning phase
B. system design specification phase
C. development & documentation phase
D. acceptance phase

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

The Answer: "acceptance phase". Note the question asks about an "evaluation report" - which details how the system evaluated, and an "accreditation statement" which describes the level the system is allowed to operate at. Because those two activities are a part of testing and testing is a part of the acceptance phase, the only answer above that can be correct is "acceptance phase".

The other answers are not correct because:

The "project initiation and planning phase" is just the idea phase. Nothing has been developed yet to be evaluated, tested, accredited, etc.

The "system design specification phase" is essentially where the initiation and planning phase is fleshed out. For example, in the initiation and planning phase, we might decide we want the system to have authentication. In the design specification phase, we decide that that authentication will be accomplished via username/ password. But there is still nothing actually developed at this point to evaluate or accredit.

The "development & documentation phase" is where the system is created and documented. Part of the documentation includes specific evaluation and accreditation criteria. That is the criteria that will be used to evaluate and accredit the system during the "acceptance phase".

In other words - you cannot evaluate or accredit a system that has not been created yet. Of the four answers listed, only the acceptance phase is dealing with an existing system. The others deal with planning and creating the system, but the actual system isn't there yet.

Reference:
Official ISC2 Guide Page: 558 - 559
All in One Third Edition page: 832 - 833 (recommended reading)

QUESTION 271
Which of the following is often the greatest challenge of distributed computing solutions?

A. scalability
B. security
C. heterogeneity
D. usability

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The correct answer to this "security". It is a major factor in deciding if a centralized or decentralized environment is more appropriate.

Example: In a centralized computing environment, you have a central server and workstations (often "dumb terminals") access applications, data, and everything else from that central servers. Therefore, the vast majority of your security resides on a centrally managed server. In a decentralized (or distributed) environment,

you have a collection of PC's each with their own operating systems to maintain, their own software to maintain, local data storage requiring protection and backup. You may also have PDA's and "smart phones", data watches, USB devices of all types able to store data... the list gets longer all the time.

It is entirely possible to reach a reasonable and acceptable level of security in a distributed environment. But doing so is significantly more difficult, requiring more effort, more money, and more time. The other answers are not correct because:

scalability - A distributed computing environment is almost infinitely scalable. Much more so than a centralized environment. This is therefore a bad answer.

heterogeneity - Having products and systems from multiple vendors in a distributed environment is significantly easier than in a centralized environment. This would not be a "challenge of distributed computing solutions" and so is not a good answer.

usability - This is potentially a challenge in either environment, but whether or not this is a problem has very little to do with whether it is a centralized or distributed environment. Therefore, this would not be a good answer.

Reference:
Official ISC2 Guide page: 313-314
All in One Third Edition page: (unavailable at this time)

QUESTION 272
What is the appropriate role of the security analyst in the application system development or acquisition project?

A. policeman
B. control evaluator & consultant
C. data owner
D. application user

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The correct answer is "control evaluator & consultant". During any system development or acquisition, the security staff should evaluate security controls and advise (or consult) on the strengths and weaknesses with those responsible for making the final decisions on the project.

The other answers are not correct because:

policeman - It is never a good idea for the security staff to be placed into this type of role (though it is sometimes unavoidable). During system development or acquisition, there should be no need of anyone filling the role of policeman.

data owner - In this case, the data owner would be the person asking for the new system to manage, control, and secure information they are responsible for. While it is possible the security staff could also be the data owner for such a project if they happen to have responsibility for the information, it is also possible someone else would fill this role. Therefore, the best answer remains "control evaluator & consultant".

application user - Again, it is possible this could be the security staff, but it could also be many other people or groups. So this is not the best answer.

Reference:
Official ISC2 Guide page: 555 - 560
All in One Third Edition page: 832 - 846

QUESTION 273
The information security staff's participation in which of the following system development life cycle phases provides maximum benefit to the organization?

A. project initiation and planning phase
B. system design specifications phase
C. development and documentation phase
D. in parallel with every phase throughout the project

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The other answers are not correct because:

You are always looking for the "best" answer. While each of the answers listed here could be considered correct in that each of them require input from the security staff, the best answer is for that input to happen at all phases of the project.

Reference:
Official ISC2 Guide page: 556
All in One Third Edition page: 832 - 833

QUESTION 274
Which of the following is NOT an example of an operational control?

A. backup and recovery
B. Auditing
C. contingency planning

D. operations procedures

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Operational controls are controls over the hardware, the media used and the operators using these resources.

Operational controls are controls that are implemented and executed by people, they are most often procedures.

Backup and recovery, contingency planning and operations procedures are operational controls.

Auditing is considered an Administrative / detective control. However the actual auditing mechanisms in place on the systems would be consider operational controls.

QUESTION 275
Degaussing is used to clear data from all of the following medias except:

A. Floppy Disks
B. Read-Only Media
C. Video Tapes
D. Magnetic Hard Disks

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Atoms and Data

Shon Harris says: "A device that performs degaussing generates a coercive magnetic force that reduces the magnetic flux density of the storage media to zero. This magnetic force is what properly erases data from media. Data are stored on magnetic media by the representation of the polarization of the atoms. Degaussing changes"

The latest ISC2 book says:
"Degaussing can also be a form of media destruction. High-power degaussers are so strong in some cases that they can literally bend and warp the platters in a hard drive. Shredding and burning are effective destruction methods for non-rigid magnetic media. Indeed, some shredders are capable of shredding some rigid media such as an optical disk. This may be an effective alternative for any optical media containing nonsensitive information due to the residue size remaining after

feeding the disk into the machine. However, the residue size might be too large for media containing sensitive information. Alternatively, grinding and pulverizing are acceptable choices for rigid and solid-state media. Specialized devices are available for grinding the face of optical media that either sufficiently scratches the surface to render the media unreadable or actually grinds off the data layer of the disk. Several services also exist which will collect drives, destroy them on site if requested and provide certification of completion. It will be the responsibility of the security professional to help, select, and maintain the most appropriate solutions for media cleansing and disposal."

Degaussing is achieved by passing the magnetic media through a powerful magnet field to rearrange the metallic particles, completely removing any resemblance of the previously recorded signal (from the "all about degaussers link below). Therefore, degaussing will work on any electronic based media such as floppy disks, or hard disks - all of these are examples of electronic storage. However, "read-only media" includes items such as paper printouts and CD-ROM wich do not store data in an electronic form or is not magnetic storage. Passing them through a magnet field has no effect on them.

Not all clearing/ purging methods are applicable to all media— for example, optical media is not susceptible to degaussing, and overwriting may not be effective against Flash devices. The degree to which information may be recoverable by a sufficiently motivated and capable adversary must not be underestimated or guessed at in ignorance. For the highest-value commercial data, and for all data regulated by government or military classification rules, read and follow the rules and standards.

I will admit that this is a bit of a trick question. Determining the difference between "read-only media" and "read-only memory" is difficult for the question taker. However, I believe it is representative of the type of question you might one day see on an exam.

The other answers are incorrect because:

Floppy Disks, Magnetic Tapes, and Magnetic Hard Disks are all examples of magnetic storage, and therefore are erased by degaussing.

A videotape is a recording of images and sounds on to magnetic tape as opposed to film stock used in filmmaking or random access digital media. Videotapes are also used for storing scientific or medical data, such as the data produced by an electrocardiogram. In most cases, a helical scan video head rotates against the moving tape to record the data in two dimensions, because video signals have a very high bandwidth, and static heads would require extremely high tape speeds. Videotape is used in both video tape recorders (VTRs) or, more commonly and more recently, videocassette recorder (VCR) and camcorders. A Tape use a linear method of storing information and since nearly all video recordings made nowadays are digital direct to disk recording (DDR), videotape is expected to gradually lose importance as non-linear/random-access methods of storing digital video data become more common.

Reference(s) used for this question:

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 25627-25630). McGraw-Hill. Kindle Edition.
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Security Operations (Kindle Locations 580-588). . Kindle Edition.

All About Degaussers and Erasure of Magnetic Media:
http://www.degausser.co.uk/degauss/degabout.htm

http://www.degaussing.net/
http://www.cerberussystems.com/INFOSEC/stds/ncsctg25.htm

QUESTION 276
It is a violation of the "separation of duties" principle when which of the following individuals access the software on systems implementing security?

A. security administrator
B. security analyst
C. systems auditor
D. systems programmer

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Reason: The security administrator, security analysis, and the system auditor need access to portions of the security systems to accomplish their jobs. The system programmer does not need access to the working (AKA: Production) security systems.

Programmers should not be allowed to have ongoing direct access to computers running production systems (systems used by the organization to operate its business). To maintain system integrity, any changes they make to production systems should be tracked by the organization's change management control system.

Because the security administrator's job is to perform security functions, the performance of non-security tasks must be strictly limited. This separation of duties reduces the likelihood of loss that results from users abusing their authority by taking actions outside of their assigned functional responsibilities.

References:
OFFICIAL (ISC)2® GUIDE TO THE CISSP® EXAM (2003), Hansche, S., Berti, J., Hare, H., Auerbach Publication, FL, Chapter 5 - Operations Security, section 5.3,"Security Technology and Tools," Personnel section (page 32).

KRUTZ, R. & VINES, R. The CISSP Prep Guide: Gold Edition (2003), Wiley Publishing Inc., Chapter 6: Operations Security, Separations of Duties (page 303).

QUESTION 277
When backing up an applications system's data, which of the following is a key question to be answered first?

A. When to make backups
B. Where to keep backups
C. What records to backup

D. How to store backups

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
It is critical that a determination be made of WHAT data is important and should be retained and protected. Without determining the data to be backed up, the potential for error increases. A record or file could be vital and yet not included in a backup routine. Alternatively, temporary or insignificant files could be included in a backup routine unnecessarily.

The following answers were incorrect:

When to make backups Although it is important to consider schedules for backups, this is done after the decisions are made of what should be included in the backup routine.

Where to keep backups The location of storing backup copies of data (Such as tapes, on-line backups, etc) should be made after determining what should be included in the backup routine and the method to store the backup.

How to store backups The backup methodology should be considered after determining what data should be included in the backup routine.

QUESTION 278
A 'Pseudo flaw' is which of the following?

A. An apparent loophole deliberately implanted in an operating system program as a trap for intruders.
B. An omission when generating Psuedo-code.
C. Used for testing for bounds violations in application programming.
D. A normally generated page fault causing the system to halt.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A Pseudo flaw is something that looks like it is vulnerable to attack, but really acts as an alarm or triggers automatic actions when an intruder attempts to exploit the flaw.

The following answers are incorrect:

An omission when generating Psuedo-code. Is incorrect because it is a distractor.
Used for testing for bounds violations in application programming. Is incorrect, this is a testing methodology.
A normally generated page fault causing the system to halt. This is incorrect because it is distractor.

QUESTION 279
Which of the following is considered the weakest link in a security system?

A. People
B. Software
C. Communications
D. Hardware

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Answer: People. The other choices can be strengthened and counted on (For the most part) to remain consistent if properly protected. People are fallible and unpredictable. Most security intrusions are caused by employees. People get tired, careless, and greedy. They are not always reliable and may falter in following defined guidelines and best practices. Security professionals must install adequate prevention and detection controls and properly train all systems users Proper hiring and firing practices can eliminate certain risks. Security Awareness training is key to ensuring people are aware of risks and their responsibilities.

The following answers are incorrect:Software. Although software exploits are major threat and cause for concern, people are the weakest point in a security posture. Software can be removed, upgraded or patched to reduce risk.

Communications. Although many attacks from inside and outside an organization use communication methods such as the network infrastructure, this is not the weakest point in a security posture. Communications can be monitored, devices installed or upgraded to reduce risk and react to attack attempts.

Hardware. Hardware components can be a weakness in a security posture, but they are not the weakest link of the choices provided. Access to hardware can be minimized by such measures as installing locks and monitoring access in and out of certain areas.

The following reference(s) were/was used to create this question:

Shon Harris AIO v.3 P.19, 107-109
ISC2 OIG 2007, p.51-55

QUESTION 280

Which of the following is based on the premise that the quality of a software product is a direct function of the quality of its associated software development and maintenance processes?

A. The Software Capability Maturity Model (CMM)
B. The Spiral Model
C. The Waterfall Model
D. Expert Systems Model

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Capability Maturity Model (CMM) is a service mark owned by Carnegie Mellon University (CMU) and refers to a development model elicited from actual data. The data was collected from organizations that contracted with the U.S. Department of Defense, who funded the research, and became the foundation from which CMU created the Software Engineering Institute (SEI). Like any model, it is an abstraction of an existing system.

The Capability Maturity Model (CMM) is a methodology used to develop and refine an organization's software development process. The model describes a fivelevel evolutionary path of increasingly organized and systematically more mature processes. CMM was developed and is promoted by the Software Engineering Institute (SEI), a research and development center sponsored by the U.S. Department of Defense (DoD). SEI was founded in 1984 to address software engineering issues and, in a broad sense, to advance software engineering methodologies. More specifically, SEI was established to optimize the process of developing, acquiring, and maintaining heavily software-reliant systems for the DoD. Because the processes involved are equally applicable to the software industry as a whole, SEI advocates industry-wide adoption of the CMM.

The CMM is similar to ISO 9001, one of the ISO 9000 series of standards specified by the International Organization for Standardization (ISO). The ISO 9000 standards specify an effective quality system for manufacturing and service industries; ISO 9001 deals specifically with software development and maintenance. The main difference between the two systems lies in their respective purposes: ISO 9001 specifies a minimal acceptable quality level for software processes, while the CMM establishes a framework for continuous process improvement and is more explicit than the ISO standard in defining the means to be employed to that end.
CMM's Five Maturity Levels of Software Processes

At the initial level, processes are disorganized, even chaotic. Success is likely to depend on individual efforts, and is not considered to be repeatable, because processes would not be sufficiently defined and documented to allow them to be replicated.
At the repeatable level, basic project management techniques are established, and successes could be repeated, because the requisite processes would have been made established, defined, and documented.
At the defined level, an organization has developed its own standard software process through greater attention to documentation, standardization, and integration.
At the managed level, an organization monitors and controls its own processes through data collection and analysis.

At the optimizing level, processes are constantly being improved through monitoring feedback from current processes and introducing innovative processes to better serve the organization's particular needs.

When it is applied to an existing organization's software development processes, it allows an effective approach toward improving them. Eventually it became clear that the model could be applied to other processes. This gave rise to a more general concept that is applied to business processes and to developing people. CMM is superseded by CMMI

The CMM model proved useful to many organizations, but its application in software development has sometimes been problematic. Applying multiple models that are not integrated within and across an organization could be costly in terms of training, appraisals, and improvement activities. The Capability Maturity Model Integration (CMMI) project was formed to sort out the problem of using multiple CMMs.

For software development processes, the CMM has been superseded by Capability Maturity Model Integration (CMMI), though the CMM continues to be a general theoretical process capability model used in the public domain. CMM is adapted to processes other than software development

The CMM was originally intended as a tool to evaluate the ability of government contractors to perform a contracted software project. Though it comes from the area of software development, it can be, has been, and continues to be widely applied as a general model of the maturity of processes (e.g., IT Service Management processes) in IS/IT (and other) organizations.

Source:

http://searchsoftwarequality.techtarget.com/sDefinition/0,,sid92_gci930057,00.html
and
http://en.wikipedia.org/wiki/Capability_Maturity_Model

QUESTION 281
Which of the following determines that the product developed meets the projects goals?

A. verification

B. validation
C. concurrence
D. accuracy

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Software Development Verification vs. Validation:

Verification determines if the product accurately represents and meets the design specifications given to the developers. A product can be developed that does not match the original specifications. This step ensures that the specifications are properly met and closely followed by the development team.

Validation determines if the product provides the necessary solution intended real-world problem. It validates whether or not the final product is what the user expected in the first place and whether or not it solve the problem it intended to solve. In large projects, it is easy to lose sight of overall goal. This exercise ensures that the main goal of the project is met.

From DITSCAP:
6.3.2. Phase 2, Verification. The Verification phase shall include activities to verify compliance of the system with previously agreed security requirements. For each life-cycle development activity, DoD Directive 5000.1 (reference (i)), there is a corresponding set of security activities, enclosure 3, that shall verify compliance with the security requirements and evaluate vulnerabilities.

6.3.3. Phase 3, Validation. The Validation phase shall include activities to evaluate the fully integrated system to validate system operation in a specified computing environment with an acceptable level of residual risk. Validation shall culminate in an approval to operate.

NOTE:
DIACAP has replace DITSCAP but the definition above are still valid and applicable for the purpose of the exam.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 1106). McGraw-Hill. Kindle Edition.
and
http://iase.disa.mil/ditscap/DITSCAP.html

QUESTION 282
Which of the following is the act of performing tests and evaluations to test a system's security level to see if it complies with the design specifications and security requirements?

A. Validation

B. Verification
C. Assessment
D. Accuracy

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Verification vs. Validation:

Verification determines if the product accurately represents and meets the specifications. A product can be developed that does not match the original specifications. This step ensures that the specifications are properly met.

Validation determines if the product provides the necessary solution intended real-world problem. In large projects, it is easy to lose sight of overall goal. This exercise ensures that the main goal of the project is met.

From DITSCAP:
6.3.2. Phase 2, Verification. The Verification phase shall include activities to verify compliance of the system with previously agreed security requirements. For each life-cycle development activity, DoD Directive 5000.1 (reference (i)), there is a corresponding set of security activities, enclosure 3, that shall verify compliance with the security requirements and evaluate vulnerabilities.

6.3.3. Phase 3, Validation. The Validation phase shall include activities to evaluate the fully integrated system to validate system operation in a specified computing environment with an acceptable level of residual risk. Validation shall culminate in an approval to operate.

You must also be familiar with Verification and Validation for the purpose of the exam. A simple definition for Verification would be whether or not the developers followed the design specifications along with the security requirements. A simple definition for Validation would be whether or not the final product meets the end user needs and can be use for a specific purpose.

Wikipedia has an informal description that is currently written as: Validation can be expressed by the query "Are you building the right thing?" and Verification by "Are you building it right?

NOTE:
DITSCAP was replaced by DIACAP some time ago (2007). While DITSCAP had defined both a verification and a validation phase, the DIACAP only has a validation phase. It may not make a difference in the answer for the exam; however, DIACAP is the cornerstone policy of DOD C&A and IA efforts today. Be familiar with both terms just in case all of a sudden the exam becomes updated with the new term.

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 1106). McGraw-Hill. Kindle Edition.

http://iase.disa.mil/ditscap/DITSCAP.html
https://en.wikipedia.org/wiki/Verification_and_validation
For the definition of "validation" in DIACAP, Click Here
Further sources for the phases in DIACAP, Click Here

QUESTION 283
Which of the following refers to the data left on the media after the media has been erased?

A. remanence
B. recovery
C. sticky bits
D. semi-hidden

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Actually the term "remanence" comes from electromagnetism, the study of the electromagnetics. Originally referred to (and still does in that field of study) the magnetic flux that remains in a magnetic circuit after an applied magnetomotive force has been removed. Absolutely no way a candidate will see anywhere near that much detail on any similar CISSP question, but having read this, a candidate won't be likely to forget it either.

It is becoming increasingly commonplace for people to buy used computer equipment, such as a hard drive, or router, and find information on the device left there by the previous owner; information they thought had been deleted. This is a classic example of data remanence: the remains of partial or even the entire data set of digital information. Normally, this refers to the data that remain on media after they are written over or degaussed. Data remanence is most common in storage systems but can also occur in memory.

Specialized hardware devices known as degaussers can be used to erase data saved to magnetic media. The measure of the amount of energy needed to reduce the magnetic field on the media to zero is known as coercivity.

It is important to make sure that the coercivity of the degausser is of sufficient strength to meet object reuse requirements when erasing data. If a degausser is used with insufficient coercivity, then a remanence of the data will exist. Remanence is the measure of the existing magnetic field on the media; it is the residue that remains after an object is degaussed or written over.

Data is still recoverable even when the remanence is small. While data remanence exists, there is no assurance of safe object reuse.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 4207-4210). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 19694-19699). Auerbach Publications. Kindle Edition.

QUESTION 284
Which of the following is NOT a basic component of security architecture?

A. Motherboard
B. Central Processing Unit (CPU
C. Storage Devices
D. Peripherals (input/output devices)

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The CPU, storage devices and peripherals each have specialized roles in the security archecture. The CPU, or microprocessor, is the brains behind a computer system and performs calculations as it solves problemes and performs system tasks. Storage devices provide both long- and short-term stoarge of information that the CPU has either processed or may process. Peripherals (scanners, printers, modems, etc) are devices that either input datra or receive the data output by the CPU.

The motherboard is the main circuit board of a microcomputer and contains the connectors for attaching additional boards. Typically, the motherboard contains the CPU, BIOS, memory, mass storage interfaces, serial and parallel ports, expansion slots, and all the controllers required to control standard peripheral devices.

Reference(s) used for this question:
TIPTON, Harold F., The Official (ISC)2 Guide to the CISSP CBK (2007), page 308.

QUESTION 285
Which of the following is a set of data processing elements that increases the performance in a computer by overlapping the steps of different instructions?

A. pipelining
B. complex-instruction-set-computer (CISC)
C. reduced-instruction-set-computer (RISC)
D. multitasking

Correct Answer: A

Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Pipelining is a natural concept in everyday life, e.g. on an assembly line. Consider the assembly of a car: assume that certain steps in the assembly line are to install the engine, install the hood, and install the wheels (in that order, with arbitrary interstitial steps). A car on the assembly line can have only one of the three steps done at once. After the car has its engine installed, it moves on to having its hood installed, leaving the engine installation facilities available for the next car. The first car then moves on to wheel installation, the second car to hood installation, and a third car begins to have its engine installed. If engine installation takes 20 minutes, hood installation takes 5 minutes, and wheel installation takes 10 minutes, then finishing all three cars when only one car can be assembled at once would take 105 minutes. On the other hand, using the assembly line, the total time to complete all three is 75 minutes. At this point, additional cars will come off the assembly line at 20 minute increments.

In computing, a pipeline is a set of data processing elements connected in series, so that the output of one element is the input of the next one. The elements of a pipeline are often executed in parallel or in time-sliced fashion; in that case, some amount of buffer storage is often inserted between elements. Pipelining is used in processors to allow overlapping execution of multiple instructions within the same circuitry. The circuitry is usually divided into stages, including instruction decoding, arithmetic, and register fetching stages, wherein each stage processes one instruction at a time.

The following were not correct answers:

CISC: is a CPU design where single instructions execute several low-level operations (such as a load from memory, an arithmetic operation, and a memory store) within a single instruction.

RISC: is a CPU design based on simplified instructions that can provide higher performance as the simplicity enables much faster execution of each instruction.

Multitasking: is a method where multiple tasks share common processing resources, such as a CPU, through a method of fast scheduling that gives the appearance of parallelism, but in reality only one task is being performed at any one time.

Reference:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, pages 188-189.
Also see
http://en.wikipedia.org/wiki/Pipeline_(computing)

QUESTION 286
Which of the following describes a computer processing architecture in which a language compiler or pre-processor breaks program instructions down into basic operations that can be performed by the processor at the same time?

A. Very-Long Instruction-Word Processor (VLIW)
B. Complex-Instruction-Set-Computer (CISC)
C. Reduced-Instruction-Set-Computer (RISC)

D. Super Scalar Processor Architecture (SCPA)

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Very long instruction word (VLIW) describes a computer processing architecture in which a language compiler or pre-processor breaks program instruction down into basic operations that can be performed by the processor in parallel (that is, at the same time). These operations are put into a very long instruction word which the processor can then take apart without further analysis, handing each operation to an appropriate functional unit.

The following answer are incorrect:

The term "CISC" (complex instruction set computer or computing) refers to computers designed with a full set of computer instructions that were intended to provide needed capabilities in the most efficient way. Later, it was discovered that, by reducing the full set to only the most frequently used instructions, the computer would get more work done in a shorter amount of time for most applications. Intel's Pentium microprocessors are CISC microprocessors.

The PowerPC microprocessor, used in IBM's RISC System/6000 workstation and Macintosh computers, is a RISC microprocessor. RISC takes each of the longer, more complex instructions from a CISC design and reduces it to multiple instructions that are shorter and faster to process. RISC technology has been a staple of mobile devices for decades, but it is now finally poised to take on a serious role in data center servers and server virtualization. The latest RISC processors support virtualization and will change the way computing resources scale to meet workload demands.

A superscalar CPU architecture implements a form of parallelism called instruction level parallelism within a single processor. It therefore allows faster CPU throughput than would otherwise be possible at a given clock rate. A superscalar processor executes more than one instruction during a clock cycle by simultaneously dispatching multiple instructions to redundant functional units on the processor. Each functional unit is not a separate CPU core but an execution resource within a single CPU such as an arithmetic logic unit, a bit shifter, or a multiplier.

Reference(s) Used for this question:
http://whatis.techtarget.com/definition/0,,sid9_gci214395,00.html
and
http://searchcio-midmarket.techtarget.com/definition/CISC
and
http://en.wikipedia.org/wiki/Superscalar

QUESTION 287
Which of the following addresses a portion of the primary memory by specifying the actual address of the memory location?

A. direct addressing
B. Indirect addressing

C. implied addressing
D. indexed addressing

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Absolute/Direct

```
+------+-----+--------------------------------------+
| load | reg |        address                       |
+------+-----+--------------------------------------+
```

(Effective address = address as given in instruction)

This requires space in an instruction for quite a large address. It is often available on CISC machines which have variable-length instructions, such as x86.

Some RISC machines have a special Load Upper Literal instruction which places a 16-bit constant in the top half of a register. An OR literal instruction can be used to insert a 16-bit constant in the lower half of that register, so that a full 32-bit address can then be used via the register-indirect addressing mode, which itself is provided as "base-plus-offset" with an offset of 0. http://en.wikipedia.org/wiki/Addressing_mode (Very good coverage of the subject)

also see:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, page 186. also see: http://www.comsci.us/ic/notes/am.html

QUESTION 288
Which of the following is NOT true concerning Application Control?

A. It limits end users use of applications in such a way that only particular screens are visible.
B. Only specific records can be requested through the application controls
C. Particular usage of the application can be recorded for audit purposes
D. It is non-transparent to the endpoint applications so changes are needed to the applications and databases involved

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

Source: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 2, Auerbach.

QUESTION 289
Which of the following are NOT a countermeasure to traffic analysis?

A. Padding messages.
B. Eavesdropping.
C. Sending noise.
D. Faraday Cage

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Eavesdropping is not a countermeasure, it is a type of attack where you are collecting traffic and attempting to see what is being send between entities communicating with each other.

The following answers are incorrect:

Padding Messages. Is incorrect because it is considered a countermeasure you make messages uniform size, padding can be used to counter this kind of attack, in which decoy traffic is sent out over the network to disguise patterns and make it more difficult to uncover patterns.
Sending Noise. Is incorrect because it is considered a countermeasure, tansmitting non-informational data elements to disguise real data.

Faraday Cage Is incorrect because it is a tool used to prevent emanation of electromagnetic waves. It is a very effective tool to prevent traffic analysis.

QUESTION 290
Preservation of confidentiality within information systems requires that the information is not disclosed to:

A. Authorized person
B. Unauthorized persons or processes.
C. Unauthorized persons.
D. Authorized persons and processes

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Confidentiality assures that the information is not disclosed to unauthorized persons or processes.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 31.

QUESTION 291
Which of the following is not one of the three goals of Integrity addressed by the Clark-Wilson model?

A. Prevention of the modification of information by unauthorized users.
B. Prevention of the unauthorized or unintentional modification of information by authorized users.
C. Preservation of the internal and external consistency.
D. Prevention of the modification of information by authorized users.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
There is no need to prevent modification from authorized users. They are authorized and allowed to make the changes. On top of this, it is also NOT one of the goal of Integrity within Clark-Wilson.

As it turns out, the Biba model addresses only the first of the three integrity goals which is Prevention of the modification of information by unauthorized users. Clark-Wilson addresses all three goals of integrity.

The Clark–Wilson model improves on Biba by focusing on integrity at the transaction level and addressing three major goals of integrity in a commercial environment. In addition to preventing changes by unauthorized subjects, Clark and Wilson realized that high-integrity systems would also have to prevent undesirable changes by authorized subjects and to ensure that the system continued to behave consistently. It also recognized that it would need to ensure that there is constant mediation between every subject and every object if such integrity was going to be maintained.

Integrity is addressed through the following three goals:

1. Prevention of the modification of information by unauthorized users.
2. Prevention of the unauthorized or unintentional modification of information by authorized users.
3. Preservation of the internal and external consistency.

The following reference(s) were used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17689-17694). Auerbach Publications. Kindle Edition. and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 31.

QUESTION 292
External consistency ensures that the data stored in the database is:

A. in-consistent with the real world.

B. remains consistant when sent from one system to another.
C. consistent with the logical world.
D. consistent with the real world.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
External consistency ensures that the data stored in the database is consistent with the real world.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, page 33.

QUESTION 293
Which of the following would be best suited to oversee the development of an information security policy?

A. System Administrators
B. End User
C. Security Officers
D. Security administrators

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The security officer would be the best person to oversea the development of such policies.

Security officers and their teams have typically been charged with the responsibility of creating the security policies. The policies must be written and communicated appropriately to ensure that they can be understood by the end users. Policies that are poorly written, or written at too high of an education level (common industry practice is to focus the content for general users at the sixth- to eighth-grade reading level), will not be understood.

Implementing security policies and the items that support them shows due care by the company and its management staff. Informing employees of what is expected of them and the consequences of noncompliance can come down to a liability issue.

While security officers may be responsible for the development of the security policies, the effort should be collaborative to ensure that the business issues are addressed.

The security officers will get better corporate support by including other areas in policy development. This helps build buy-in by these areas as they take on a greater ownership of the final product. Consider including areas such as HR, legal, compliance, various IT areas and specific business area representatives who represent critical business units.

When policies are developed solely within the IT department and then distributed without business input, they are likely to miss important business considerations. Once policy documents have been created, the basis for ensuring compliance is established. Depending on the organization, additional documentation may be necessary to support policy. This support may come in the form of additional controls described in standards, baselines, or procedures to help personnel with compliance. An important step after documentation is to make the most current version of the documents readily accessible to those who are expected to follow them. Many organizations place the documents on their intranets or in shared file folders to facilitate their accessibility. Such placement of these documents plus checklists, forms, and sample documents can make awareness more effective.

For your exam you should know the information below:

End User - The end user is responsible for protecting information assets on a daily basis through adherence to the security policies that have been communicated.

Executive Management/Senior Management - Executive management maintains the overall responsibility for protection of the information assets. The business operations are dependent upon information being available, accurate, and protected from individuals without a need to know.

Security Officer - The security officer directs, coordinates, plans, and organizes information security activities throughout the organization. The security officer works with many different individuals, such as executive management, management of the business units, technical staff, business partners, auditors, and third parties such as vendors. The security officer and his or her team are responsible for the design, implementation, management, and review of the organization's security policies, standards, procedures, baselines, and guidelines.

Information Systems Security Professional- Drafting of security policies, standards and supporting guidelines, procedures, and baselines is coordinated through these individuals. Guidance is provided for technical security issues, and emerging threats are considered for the adoption of new policies. Activities such as interpretation of government regulations and industry trends and analysis of vendor solutions to include in the security architecture that advances the security of the organization are performed in this role.

Data/Information/Business/System Owners - A business executive or manager is typically responsible for an information asset. These are the individuals that assign the appropriate classification to information assets. They ensure that the business information is protected with appropriate controls. Periodically, the information asset owners need to review the classification and access rights associated with information assets. The owners, or their delegates, may be required to

approve access to the information. Owners also need to determine the criticality, sensitivity, retention, backups, and safeguards for the information. Owners or their delegates are responsible for understanding the risks that exist with regards to the information that they control.

Data/Information Custodian/Steward - A data custodian is an individual or function that takes care of the information on behalf of the owner. These individuals ensure that the information is available to the end users and is backed up to enable recovery in the event of data loss or corruption. Information may be stored in files, databases, or systems whose technical infrastructure must be managed, by systems administrators. This group administers access rights to the information assets.

Information Systems Auditor- IT auditors determine whether users, owners, custodians, systems, and networks are in compliance with the security policies, procedures, standards, baselines, designs, architectures, management direction, and other requirements placed on systems. The auditors provide independent assurance to the management on the appropriateness of the security controls. The auditor examines the information systems and determines whether they are designed, configured, implemented, operated, and managed in a way ensuring that the organizational objectives are being achieved. The auditors provide top company management with an independent view of the controls and their effectiveness.

Business Continuity Planner - Business continuity planners develop contingency plans to prepare for any occurrence that could have the ability to impact the company's objectives negatively. Threats may include earthquakes, tornadoes, hurricanes, blackouts, changes in the economic/political climate, terrorist activities, fire, or other major actions potentially causing significant harm. The business continuity planner ensures that business processes can continue through the disaster and coordinates those activities with the business areas and information technology personnel responsible for disaster recovery.

Information Systems/ Technology Professionals- These personnel are responsible for designing security controls into information systems, testing the controls, and implementing the systems in production environments through agreed upon operating policies and procedures. The information systems professionals work with the business owners and the security professionals to ensure that the designed solution provides security controls commensurate with the acceptable criticality, sensitivity, and availability requirements of the application.

Security Administrator - A security administrator manages the user access request process and ensures that privileges are provided to those individuals who have been authorized for access by application/system/data owners. This individual has elevated privileges and creates and deletes accounts and access permissions. The security administrator also terminates access privileges when individuals leave their jobs or transfer between company divisions. The security administrator maintains records of access request approvals and produces reports of access rights for the auditor during testing in an access controls audit to demonstrate compliance with the policies.

Network/Systems Administrator - A systems administrator (sysadmin/netadmin) configures network and server hardware and the operating systems to ensure that the information can be available and accessible. The administrator maintains the computing infrastructure using tools and utilities such as patch management and software distribution mechanisms to install updates and test patches on organization computers. The administrator tests and implements system upgrades to ensure the continued reliability of the servers and network devices. The administrator provides vulnerability management through either commercial off the shelf (COTS) and/or non-COTS solutions to test the computing environment and mitigate vulnerabilities appropriately.

Physical Security - The individuals assigned to the physical security role establish relationships with external law enforcement, such as the local police agencies, state police, or the Federal Bureau of Investigation (FBI) to assist in investigations. Physical security personnel manage the installation, maintenance, and ongoing operation of the closed circuit television (CCTV) surveillance systems, burglar alarm systems, and card reader access control systems. Guards are placed where necessary as a deterrent to unauthorized access and to provide safety for the company employees. Physical security personnel interface with systems security, human resources, facilities, and legal and business areas to ensure that the practices are integrated.

Security Analyst - The security analyst role works at a higher, more strategic level than the previously described roles and helps develop policies, standards, and guidelines, as well as set various baselines. Whereas the previous roles are “in the weeds” and focus on pieces and parts of the security program, a security analyst helps define the security program elements and follows through to ensure the elements are being carried out and practiced properly. This person works more at a design level than at an implementation level.

Administrative Assistants/Secretaries - This role can be very important to information security; in many companies of smaller size, this may be the individual who greets visitors, signs packages in and out, recognizes individuals who desire to enter the offices, and serves as the phone screener for executives. These individuals may be subject to social engineering attacks, whereby the potential intruder attempts to solicit confidential information that may be used for a subsequent attack. Social engineers prey on the goodwill of the helpful individual to gain entry. A properly trained assistant will minimize the risk of divulging useful company information or of providing unauthorized entry.

Help Desk Administrator - As the name implies, the help desk is there to field questions from users that report system problems. Problems may include poor response time, potential virus infections, unauthorized access, inability to access system resources, or questions on the use of a program. The help desk is also often where the first indications of security issues and incidents will be seen. A help desk individual would contact the computer security incident response team (CIRT) when a situation meets the criteria developed by the team. The help desk resets passwords, resynchronizes/reinitializes tokens and smart cards, and resolves other problems with access control.

Supervisor - The supervisor role, also called user manager, is ultimately responsible for all user activity and any assets created and owned by these users. For example, suppose Kathy is the supervisor of ten employees. Her responsibilities would include ensuring that these employees understand their responsibilities with respect to security; making sure the employees’ account information is up-to-date; and informing the security administrator when an employee is fired, suspended, or transferred. Any change that pertains to an employee’s role within the company usually affects what access rights they should and should not have, so the user manager must inform the security administrator of these changes immediately.

Change Control Analyst Since the only thing that is constant is change, someone must make sure changes happen securely. The change control analyst is responsible for approving or rejecting requests to make changes to the network, systems, or software. This role must make certain that the change will not introduce any vulnerabilities, that it has been properly tested, and that it is properly rolled out. The change control analyst needs to understand how various changes can affect security, interoperability, performance, and productivity. Or, a company can choose to just roll out the change and see what happens.

The following answers are incorrect:

Systems Administrator - A systems administrator (sysadmin/netadmin) configures network and server hardware and the operating systems to ensure that the information can be available and accessible. The administrator maintains the computing infrastructure using tools and utilities such as patch management and software distribution mechanisms to install updates and test patches on organization computers. The administrator tests and implements system upgrades to ensure the continued reliability of the servers and network devices. The administrator provides vulnerability management through either commercial off the shelf (COTS) and/or non-COTS solutions to test the computing environment and mitigate vulnerabilities appropriately.

End User - The end user is responsible for protecting information assets on a daily basis through adherence to the security policies that have been communicated.

Security Administrator - A security administrator manages the user access request process and ensures that privileges are provided to those individuals who have been authorized for access by application/system/data owners. This individual has elevated privileges and creates and deletes accounts and access permissions. The security administrator also terminates access privileges when individuals leave their jobs or transfer between company divisions. The security administrator maintains records of access request approvals and produces reports of access rights for the auditor during testing in an access controls audit to demonstrate compliance with the policies.

Following reference(s) were/was used to create this question:
CISA review manual 2014 Page number 109
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 108). McGraw-Hill. Kindle Edition.

QUESTION 294
Which of the following is the MOST important aspect relating to employee termination?

A. The details of employee have been removed from active payroll files.

B. Company property provided to the employee has been returned.
C. User ID and passwords of the employee have been deleted.
D. The appropriate company staff are notified about the termination.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Even though Logical access to information by a terminated employee is possible if the ID and password of the terminated employee has not been deleted this is only one part of the termination procedures. If user ID is not disabled or deleted, it could be possible for the employee without physical access to visit the companies networks remotely and gain access to the information.

Please note that this can also be seen in a different way: the most important thing to do could also be to inform others of the person's termination, because even if user ID's and passwords are deleted, a terminated individual could simply socially engineer their way back in by calling an individual he/she used to work with and ask them for access. He could intrude on the facility or use other weaknesses to gain access to information after he has been terminated.

By notifying the appropriate company staff about the termination, they would in turn intitiate account termination, ask the employee to return company property, and all credentials would be withdrawn for the individual concerned. This answer is more complete than simply disabling account.

It seems harsh and cold when this actually takes place , but too many companies have been hurt by vengeful employees who have lashed out at the company when their positions were revoked for one reason or another. If an employee is disgruntled in any way, or the termination is unfriendly, that employee's accounts should be disabled right away, and all passwords on all systems changed.

For your exam you should know the information below:

Employee Termination Processes
Employees join and leave organizations every day. The reasons vary widely, due to retirement,reduction in force, layoffs, termination with or without cause, relocation to another city, careeropportunities with other employers, or involuntary transfers. Terminations may be friendly or unfriendly and will need different levels of care as a result.

Friendly Terminations
Regular termination is when there is little or no evidence or reason to believe that the termination is not agreeable to both the company and the employee. A standard set of procedures, typically maintained by the human resources department, governs the dismissal of the terminated employee to ensure that company property is returned, and all access is removed. These procedures may include exit interviews and return of keys, identification cards, badges, tokens, and cryptographic keys. Other property, such as laptops, cable locks, credit cards, and phone cards, are also collected. The user manager notifies the security department of the termination to ensure that access is revoked for all platforms and facilities. Some facilities choose to immediately delete the accounts, while others choose to disable the accounts for a policy defined period, for example, 30 days, to account for changes or extensions in the final termination date. The termination process should include a conversation with the departing associate about their continued responsibility for confidentiality of information.

Unfriendly Terminations

Unfriendly terminations may occur when the individual is fired, involuntarily transferred, laid off,or when the organization has reason to believe that the individual has the means and intention to potentially cause harm to the system. Individuals with technical skills and higher levels of access, such as the systems administrators, computer programmers, database administrators, or any individual with elevated privileges, may present higher risk to the environment. These individuals could alter files, plant logic bombs to create system file damage at a future date, or remove sensitive information. Other disgruntled users could enter erroneous data into the system that may not be discovered for several months. In these situations, immediate termination of systems access is warranted at the time of termination or prior to notifying the employee of the termination. Managing the people aspect of security, from pre-employment to postemployment, is critical to ensure that trustworthy, competent resources are employed to further the business objectives that will protect company information. Each of these actions contributes to preventive, detective, or corrective personnel controls.

The following answers are incorrect:

The other options are less important.

Following reference(s) were/was used to create this question:
CISA review manual 2014 Page number 99
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 129). McGraw-Hill. Kindle Edition.

QUESTION 295
Making sure that only those who are supposed to access the data can access is which of the following?

A. confidentiality.
B. capability.
C. integrity.
D. availability.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
From the published (ISC)2 goals for the Certified Information Systems Security Professional candidate, domain definition. Confidentiality is making sure that only those who are supposed to access the data can access it.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 59.

QUESTION 296
Related to information security, confidentiality is the opposite of which of the following?

A. closure
B. disclosure
C. disposal
D. disaster

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Confidentiality is the opposite of disclosure.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 59.

QUESTION 297
Related to information security, integrity is the opposite of which of the following?

A. abstraction
B. alteration
C. accreditation
D. application

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Integrity is the opposite of "alteration."
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 59.

QUESTION 298
Making sure that the data is accessible when and where it is needed is which of the following?

A. confidentiality
B. integrity
C. acceptability
D. availability

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Availability is making sure that the data is accessible when and where it is needed.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 59.

QUESTION 299
Related to information security, availability is the opposite of which of the following?

A. delegation
B. distribution

C. documentation
D. destruction

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Availability is the opposite of "destruction."
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 59.

QUESTION 300
Related to information security, the prevention of the intentional or unintentional unauthorized disclosure of contents is which of the following?

A. Confidentiality
B. Integrity
C. Availability
D. capability

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Confidentiality is the prevention of the intentional or unintentional unauthorized disclosure of contents.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 60.

QUESTION 301
Related to information security, the guarantee that the message sent is the message received with the assurance that the message was not intentionally or unintentionally altered is an example of which of the following?

A. integrity

B. confidentiality
C. availability
D. identity

Correct Answer: A

Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Integrity is the guarantee that the message sent is the message received, and that the message was not intentionally or unintentionally altered.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 60.

QUESTION 302
One of the following assertions is NOT a characteristic of Internet Protocol Security (IPsec)

A. Data cannot be read by unauthorized parties
B. The identity of all IPsec endpoints are confirmed by other endpoints
C. Data is delivered in the exact order in which it is sent
D. The number of packets being exchanged can be counted.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
IPSec provide replay protection that ensures data is not delivered multiple times, however IPsec does not ensure that data is delivered in the exact order in which it is sent. IPSEC uses TCP and packets may be delivered out of order to the receiving side depending which route was taken by the packet.

Internet Protocol Security (IPsec) has emerged as the most commonly used network layer security control for protecting communications. IPsec is a framework of open standards for ensuring private communications over IP networks. Depending on how IPsec is implemented and configured, it can provide any combination of the following types of protection:

Confidentiality. IPsec can ensure that data cannot be read by unauthorized parties. This is accomplished by encrypting data using a cryptographic algorithm and a secret key a value known only to the two parties exchanging data. The data can only be decrypted by someone who has the secret key.

Integrity. IPsec can determine if data has been changed (intentionally or unintentionally) during transit. The integrity of data can be assured by generating a message authentication code (MAC) value, which is a cryptographic checksum of the data. If the data is altered and the MAC is recalculated, the old and new MACs will differ.

Peer Authentication. Each IPsec endpoint confirms the identity of the other IPsec endpoint with which it wishes to communicate, ensuring that the network traffic and data is being sent from the expected host.

Replay Protection. The same data is not delivered multiple times, and data is not delivered grossly out of order. However, IPsec does not ensure that data is delivered in the exact order in which it is sent.

Traffic Analysis Protection. A person monitoring network traffic does not know which parties are communicating, how often communications are occurring, or how much data is being exchanged. However, the number of packets being exchanged can be counted.

Access Control. IPsec endpoints can perform filtering to ensure that only authorized IPsec users can access particular network resources. IPsec endpoints can also allow or block certain types of network traffic, such as allowing Web server access but denying file sharing.

The following are incorrect answers because they are all features provided by IPSEC:

"Data cannot be read by unauthorized parties" is wrong because IPsec provides confidentiality through the usage of the Encapsulating Security Protocol (ESP), once encrypted the data cannot be read by unauthorized parties because they have access only to the ciphertext. This is accomplished by encrypting data using a cryptographic algorithm and a session key, a value known only to the two parties exchanging data. The data can only be decrypted by someone who has a copy of the session key.

"The identity of all IPsec endpoints are confirmed by other endpoints" is wrong because IPsec provides peer authentication: Each IPsec endpoint confirms the identity of the other IPsec endpoint with which it wishes to communicate, ensuring that the network traffic and data is being sent from the expected host.

"The number of packets being exchanged can be counted" is wrong because although IPsec provides traffic protection where a person monitoring network traffic does not know which parties are communicating, how often communications are occurring, or how much data is being exchanged, the number of packets being exchanged still can be counted.

Reference(s) used for this question:
NIST 800-77 Guide to IPsec VPNs . Pages 2-3 to 2-4

QUESTION 303
One of these statements about the key elements of a good configuration process is NOT true

A. Accommodate the reuse of proven standards and best practices
B. Ensure that all requirements remain clear, concise, and valid
C. Control modifications to system hardware in order to prevent resource changes
D. Ensure changes, standards, and requirements are communicated promptly and precisely

Correct Answer: C
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
Configuration management isn't about preventing change but ensuring the integrity of IT resources by preventing unauthorised or improper changes.

According to the Official ISC2 guide to the CISSP exam, a good CM process is one that can:

(1) accommodate change;
(2) accommodate the reuse of proven standards and best practices;
(3) ensure that all requirements remain clear, concise, and valid;
(4) ensure changes, standards, and requirements are communicated promptly and precisely; and
(5) ensure that the results conform to each instance of the product.

Configuration management
Configuration management (CM) is the detailed recording and updating of information that describes an enterprise's computer systems and networks, including all hardware and software components. Such information typically includes the versions and updates that have been applied to installed software packages and the locations and network addresses of hardware devices. Special configuration management software is available. When a system needs a hardware or software upgrade, a computer technician can accesses the configuration management program and database to see what is currently installed. The technician can then make a more informed decision about the upgrade needed.

An advantage of a configuration management application is that the entire collection of systems can be reviewed to make sure any changes made to one system do not adversely affect any of the other systems

Configuration management is also used in software development, where it is called Unified Configuration Management (UCM). Using UCM, developers can keep track of the source code, documentation, problems, changes requested, and changes made. Change management
In a computer system environment, change management refers to a systematic approach to keeping track of the details of the system (for example, what operating system release is running on each computer and which fixes have been applied).

QUESTION 304
An area of the Telecommunications and Network Security domain that directly affects the Information Systems Security tenet of Availability can be defined as:

A. Netware availability
B. Network availability
C. Network acceptability
D. Network accountability

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Network availability can be defined as an area of the Telecommunications and Network Security domain that directly affects the Information Systems Security tenet of Availability.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 64.

QUESTION 305
Risk analysis is MOST useful when applied during which phase of the system development process?

A. Project initiation and Planning
B. Functional Requirements definition
C. System Design Specification
D. Development and Implementation

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In most projects the conditions for failure are established at the beginning of the project. Thus risk management should be established at the commencement of the project with a risk assessment during project initiation.

As it is clearly stated in the ISC2 book: Security should be included at the first phase of development and throughout all of the phases of the system development life cycle. This is a key concept to understand for the purpose for the exam.

The most useful time is to undertake it at project initiation, although it is often valuable to update the current risk analysis at later stages.

Attempting to retrofit security after the SDLC is completed would cost a lot more money and might be impossible in some cases. Look at the family of browsers we use today, for the past 8 years they always claim that it is the most secure version that has been released and within days vulnerabilities will be found.

Risks should be monitored throughout the SDLC of the project and reassessed when appropriate.

The phases of the SDLC can very from one source to another one. It could be as simple as Concept, Design, and Implementation. It could also be expanded to include more phases such as this list proposed within the ISC2 Official Study book:

Project Initiation and Planning
Functional Requirements Definition
System Design Specification
Development and Implementation
Documentations and Common Program Controls
Testing and Evaluation Control, certification and accreditation (C&A)
Transition to production (Implementation)

And there are two phases that will extend beyond the SDLC, they are:

Operation and Maintenance Support (O&M)
Revisions and System Replacement (Disposal)

Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 291). and
The Official ISC2 Guide to the CISSP CBK , Second Edition, Page 182-185

QUESTION 306
Which of the following would MOST likely ensure that a system development project meets business objectives?

A. Development and tests are run by different individuals
B. User involvement in system specification and acceptance
C. Development of a project plan identifying all development activities
D. Strict deadlines and budgets

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Effective user involvement is the most critical factor in ensuring that the application meets business objectives.

A great way of getting early input from the user community is by using Prototyping. The prototyping method was formally introduced in the early 1980s to combat the perceived weaknesses of the waterfall model with regard to the speed of development. The objective is to build a simplified version (prototype) of the application, release it for review, and use the feedback from the users' review to build a second, better version.

This is repeated until the users are satisfied with the product. t is a four-step process:

initial concept,
design and implement initial prototype,
refine prototype until acceptable, and
complete and release final version.

There is also the Modified Prototype Model (MPM. This is a form of prototyping that is ideal for Web application development. It allows for the basic functionality of a desired system or component to be formally deployed in a quick time frame. The maintenance phase is set to begin after the deployment. The goal is to have the process be flexible enough so the application is not based on the state of the organization at any given time. As the organization grows and the environment changes, the application evolves with it, rather than being frozen in time.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 12101-12108 and 12099-12101). Auerbach Publications. Kindle Edition.
and
Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 296).

QUESTION 307
What is RAD?

A. A development methodology
B. A project management technique
C. A measure of system complexity
D. Risk-assessment diagramming

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
RAD stands for Rapid Application Development.

RAD is a methodology that enables organizations to develop strategically important systems faster while reducing development costs and maintaining quality.

RAD is a programming system that enables programmers to quickly build working programs.

In general, RAD systems provide a number of tools to help build graphical user interfaces that would normally take a large development effort.

Two of the most popular RAD systems for Windows are Visual Basic and Delphi. Historically, RAD systems have tended to emphasize reducing development time, sometimes at the expense of generating in-efficient executable code. Nowadays, though, many RAD systems produce extremely faster code that is optimized.

Conversely, many traditional programming environments now come with a number of visual tools to aid development. Therefore, the line between RAD systems and other development environments has become blurred.

Reference:
Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 307)
http://www.webopedia.com

QUESTION 308
Which of the following best describes the purpose of debugging programs?

A. To generate random data that can be used to test programs before implementing them.
B. To ensure that program coding flaws are detected and corrected.
C. To protect, during the programming phase, valid changes from being overwritten by other changes.
D. To compare source code versions before transferring to the test environment

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Debugging provides the basis for the programmer to correct the logic errors in a program under development before it goes into production.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 298).

QUESTION 309
Which of the following would best describe the difference between white-box testing and black-box testing?

A. White-box testing is performed by an independent programmer team.
B. Black-box testing uses the bottom-up approach.
C. White-box testing examines the program internal logical structure.
D. Black-box testing involves the business units

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Black-box testing observes the system external behavior, while white-box testing is a detailed exam of a logical path, checking the possible conditions.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 299).

QUESTION 310
Which of the following is a not a preventative control?

A. Deny programmer access to production data.

B. Require change requests to include information about dates, descriptions, cost analysis and anticipated effects.
C. Run a source comparison program between control and current source periodically.
D. Establish procedures for emergency changes.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Running the source comparison program between control and current source periodically allows detection, not prevention, of unauthorized changes in the production environment. Other options are preventive controls.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 309).

QUESTION 311
Which of the following would provide the BEST stress testing environment taking under consideration and avoiding possible data exposure and leaks of sensitive data?

A. Test environment using test data.
B. Test environment using sanitized live workloads data.
C. Production environment using test data.
D. Production environment using sanitized live workloads data.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The best way to properly verify an application or system during a stress test would be to expose it to "live" data that has been sanitized to avoid exposing any sensitive information or Personally Identifiable Data (PII) while in a testing environment. Fabricated test data may not be as varied, complex or computationally demanding as "live" data. A production environment should never be used to test a product, as a production environment is one where the application or system is being put to commercial or operational use. It is a best practice to perform testing in a non-production environment.

Stress testing is carried out to ensure a system can cope with production workloads, but as it may be tested to destruction, a test environment should always be used to avoid damaging the production environment. Hence, testing should never take place in a production environment. If only test data is used, there is no certainty that the system was adequately stress tested. Incorrect answers:

Test environment using test data. This is incorrect because live data is typically more useful during stress testing

Production environment using test data. This is incorrect because the production environment should not be used for testing.

Production environment using live workloads. This is incorrect because the production environment should not be used for testing.

Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 299). And:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 251.
And:

QUESTION 312
Which of the following BEST explains why computerized information systems frequently fail to meet the needs of users?

A. Inadequate quality assurance (QA) tools.
B. Constantly changing user needs.
C. Inadequate user participation in defining the system's requirements.
D. Inadequate project management.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Inadequate user participation in defining the system's requirements. Most projects fail to meet the needs of the users because there was inadequate input in the initial steps of the project from the user community and what their needs really are.

The other answers, while potentially valid, are incorrect because they do not represent the most common problem assosciated with information systems failing to meet the needs of users.

References: All in One pg 834

Only users can define what their needs are and, therefore, what the system should accomplish. Lack of adequate user involvement, especially in the systems requirements phase, will usually result in a system that doesn't fully or adequately address the needs of the user.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 296).

QUESTION 313
Which of the following would be the MOST serious risk where a systems development life cycle methodology is inadequate?

A. The project will be completed late.

B. The project will exceed the cost estimates.
C. The project will be incompatible with existing systems.
D. The project will fail to meet business and user needs.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
This is the most serious risk of inadequate systems development life cycle methodolgy.

The following answers are incorrect because :

The project will be completed late is incorrect as it is not most devastating as the above answer.

The project will exceed the cost estimates is also incorrect when compared to the above correct answer.

The project will be incompatible with existing systems is also incorrect when compared to the above correct answer.

Reference: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 290).

QUESTION 314
Which of the following is an advantage of prototyping?

A. Prototype systems can provide significant time and cost savings.
B. Change control is often less complicated with prototype systems.
C. It ensures that functions or extras are not added to the intended system.
D. Strong internal controls are easier to implement.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Prototype systems can provide significant time and cost savings, however they also have several disadvantages. They often have poor internal controls, change control becomes much more complicated and it often leads to functions or extras being added to the system that were not originally intended.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 306).

QUESTION 315
Which of the following is a CHARACTERISTIC of a decision support system (DSS) in regards to Threats and Risks Analysis?

A. DSS is aimed at solving highly structured problems.

B. DSS emphasizes flexibility in the decision making approach of users.
C. DSS supports only structured decision-making tasks.
D. DSS combines the use of models with non-traditional data access and retrieval functions.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
DSS emphasizes flexibility in the decision-making approach of users. It is aimed at solving less structured problems, combines the use of models and analytic techniques with traditional data access and retrieval functions and supports semi-structured decision-making tasks.

DSS is sometimes referred to as the Delphi Method or Delphi Technique:
The Delphi technique is a group decision method used to ensure that each member gives an honest opinion of what he or she thinks the result of a particular threat will be. This avoids a group of individuals feeling pressured to go along with others' thought processes and enables them to participate in an independent and anonymous way. Each member of the group provides his or her opinion of a certain threat and turns it in to the team that is performing the analysis. The results are compiled and distributed to the group members, who then write down their comments anonymously and return them to the analysis group. The comments are compiled and redistributed for more comments until a consensus is formed. This method is used to obtain an agreement on cost, loss values, and probabilities of occurrence without individuals having to agree verbally.

Here is the ISC2 book coverage of the subject:
One of the methods that uses consensus relative to valuation of information is the consensus/modified Delphi method. Participants in the valuation exercise are asked to comment anonymously on the task being discussed. This information is collected and disseminated to a participant other than the original author. This participant comments upon the observations of the original author. The information gathered is discussed in a public forum and the best course is agreed upon by the group (consensus).

EXAM TIP:
The DSS is what some of the books are referring to as the Delphi Method or Delphi Technique. Be familiar with both terms for the purpose of the exam.

The other answers are incorrect:

'DSS is aimed at solving highly structured problems' is incorrect because it is aimed at solving less structured problems.

'DSS supports only structured decision-making tasks' is also incorrect as it supports semi-structured decision-making tasks.

'DSS combines the use of models with non-traditional data access and retrieval functions' is also incorrect as it combines the use of models and analytic techniques with traditional data access and retrieval functions.

Reference(s) used for this question:

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 91). McGraw-Hill. Kindle Edition.

and
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Information Security Governance and Risk Management ((ISC)2 Press) (Kindle Locations 1424-1426). Auerbach Publications. Kindle Edition.

QUESTION 316
Which of the following is an advantage in using a bottom-up versus a top-down approach to software testing?

A. Interface errors are detected earlier.
B. Errors in critical modules are detected earlier.
C. Confidence in the system is achieved earlier.
D. Major functions and processing are tested earlier.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The bottom-up approach to software testing begins with the testing of atomic units, such as programs and modules, and work upwards until a complete system testing has taken place. The advantages of using a bottom-up approach to software testing are the fact that there is no need for stubs or drivers and errors in critical modules are found earlier. The other choices refer to advantages of a top down approach which follows the opposite path.

Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 299).

QUESTION 317
Which of the following would be the best reason for separating the test and development environments?

A. To restrict access to systems under test.
B. To control the stability of the test environment.
C. To segregate user and development staff.

D. To secure access to systems under development.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The test environment must be controlled and stable in order to ensure that development projects are tested in a realistic environment which, as far as possible, mirrors the live environment.

Reference(s) used for this question:
Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 309).

QUESTION 318
What would BEST define a covert channel?

A. An undocumented backdoor that has been left by a programmer in an operating system
B. An open system port that should be closed.
C. A communication channel that allows transfer of information in a manner that violates the system's security policy.
D. A trojan horse.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Answer: A communication channel that allows transfer of information in a manner that violates the system's security policy.

A covert channel is a way for an entity to receive information in an unauthorized manner. It is an information flow that is not controlled by a security mechanism. This type of information path was not developed for communication; thus, the system does not properly protect this path, because the developers never envisioned information being passed in this way.

Receiving information in this manner clearly violates the system’s security policy. The channel to transfer this unauthorized data is the result of one of the following conditions:• Oversight in the development of the product

• Improper implementation of access controls
• Existence of a shared resource between the two entities
• Installation of a Trojan horse

The following answers are incorrect:

An undocumented backdoor that has been left by a programmer in an operating system is incorrect because it is not a means by which unauthorized transfer of information takes place. Such backdoor is usually referred to as a Maintenance Hook.

An open system port that should be closed is incorrect as it does not define a covert channel.

A trojan horse is incorrect because it is a program that looks like a useful program but when you install it it would include a bonus such as a Worm, Backdoor, or some other malware without the installer knowing about it.

Reference(s) used for this question:

Shon Harris AIO v3 , Chapter-5 : Security Models & Architecture
AIOv4 Security Architecture and Design (pages 343 - 344)
AIOv5 Security Architecture and Design (pages 345 - 346)

QUESTION 319
Which of the following is NOT an administrative control?

A. Logical access control mechanisms
B. Screening of personnel
C. Development of policies, standards, procedures and guidelines
D. Change control procedures

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
It is considered to be a technical control.

Logical is synonymous with Technical Control. That was the easy answer.

There are three broad categories of access control: Administrative, Technical, and Physical.

Each category has different access control mechanisms that can be carried out manually or automatically. All of these access control mechanisms should work in concert with each other to protect an infrastructure and its data.

Each category of access control has several components that fall within it, as shown here:

Administrative Controls

- Policy and procedures
- Personnel controls
- Supervisory structure
- Security-awareness training
- Testing

Physical Controls

Network segregation
Perimeter security Computer controls
Work area separation
Data backups

Technical Controls

System access
Network architecture
Network access
Encryption and protocols
Control zone
Auditing

The following answers are incorrect :

Screening of personnel is considered to be an administrative control

Development of policies, standards, procedures and guidelines is considered to be an administrative control

Change control procedures is considered to be an administrative control.
Reference : Shon Harris AIO v3 , Chapter - 3 : Security Management Practices , Page : 52-54

QUESTION 320
Which of the following is NOT a technical control?

A. Password and resource management
B. Identification and authentication methods
C. Monitoring for physical intrusion

D. Intrusion Detection Systems

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
It is considered to be a 'Physical Control'

There are three broad categories of access control: administrative, technical, and physical. Each category has different access control mechanisms that can be carried out manually or automatically. All of these access control mechanisms should work in concert with each other to protect an infrastructure and its data. Each category of access control has several components that fall within it, a partial list is shown here. Not all controls fall into a single category, many of the controls will be in two or more categories. Below you have an example with backups where it is in all three categories:

Administrative Controls
Policy and procedures

- A backup policy would be in place

Personnel controls
Supervisory structure
Security-awareness training
Testing
Physical Controls
Network segregation
Perimeter security
Computer controls
Work area separation

Data backups (actual storage of the media, i:e Offsite Storage Facility)

Cabling
Technical Controls
System access
Network architecture
Network access
Encryption and protocols
Control zone

Auditing
Backup (Actual software doing the backups)

The following answers are incorrect :

Password and resource management is considered to be a logical or technical control.

Identification and authentication methods is considered to be a logical or technical control.

Intrusion Detection Systems is considered to be a logical or technical control.
Reference : Shon Harris , AIO v3 , Chapter - 4 : Access Control , Page : 180 - 185

QUESTION 321
Which of the following is BEST defined as a physical control?

A. Monitoring of system activity

B. Fencing
C. Identification and authentication methods
D. Logical access control mechanisms

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Physical controls are items put into place to protect facility, personnel, and resources. Examples of physical controls are security guards, locks, fencing, and lighting.

The following answers are incorrect answers:

Monitoring of system activity is considered to be administrative control.

Identification and authentication methods are considered to be a technical control.

Logical access control mechanisms is also considered to be a technical control.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 1280-1282). McGraw-Hill. Kindle Edition.

QUESTION 322
Which of the following is given the responsibility of the maintenance and protection of the data?

A. Data owner
B. Data custodian
C. User
D. Security administrator

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
It is usually responsible for maintaining and protecting the data.

The following answers are incorrect:

Data owner is usually a member of management , in charge of a specific business unit and is ultimately responsible for the protection and use of the information.

User is any individual who routinely uses the data for work-related tasks.

Security administrator's tasks include creating new system user accounts , implementing new security software.
References : Shon Harris AIO v3 , Chapter - 3: Security Management Practices , Pages : 99 - 103

QUESTION 323
Who should DECIDE how a company should approach security and what security measures should be implemented?

A. Senior management
B. Data owner
C. Auditor
D. The information security specialist

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
They are responsible for security of the organization and the protection of its assets.

The following answers are incorrect because :

Data owner is incorrect as data owners should not decide as to what security measures should be applied.

Auditor is also incorrect as auditor cannot decide as to what security measures should be applied.

The information security specialist is also incorrect as they may have the technical knowledge of how security measures should be implemented and configured , but they should not be in a position of deciding what measures should be applied.

Reference : Shon Harris AIO v3 , Chapter-3: Security Management Practices , Page : 51.

QUESTION 324
Which of the following is responsible for MOST of the security issues?

A. Outside espionage
B. Hackers
C. Personnel
D. Equipment failure

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Personnel cause more security issues than hacker attacks, outside espionage, or equipment failure.

The following answers are incorrect because:

Outside espionage is incorrect as it is not the best answer.
Hackers is also incorrect as it is not the best answer.
Equipment failure is also incorrect as it is not the best answer.
Reference : Shon Harris AIO v3 , Chapter-3: Security Management Practices , Page : 56

QUESTION 325
What are the three FUNDAMENTAL principles of security?

A. Accountability, confidentiality and integrity
B. Confidentiality, integrity and availability
C. Integrity, availability and accountability

D. Availability, accountability and confidentiality

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The following answers are incorrect because:

Accountability, confidentiality and integrity is not the correct answer as Accountability is not one of the fundamental principle of security.

Integrity, availability and accountability is not the correct answer as Accountability is not one of the fundamental principle of security.

Availability, accountability and confidentiality is not the correct answer as Accountability is not one of the fundamental objective of security.

References : Shon Harris AIO v3 , Chapter - 3: Security Management Practices , Pages : 49-52

QUESTION 326
Within the context of the CBK, which of the following provides a MINIMUM level of security ACCEPTABLE for an environment ?

A. A baseline B.
A standard
C. A procedure
D. A guideline

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Baselines provide the minimum level of security necessary throughout the organization.

Standards specify how hardware and software products should be used throughout the organization.

Procedures are detailed step-by-step instruction on how to achieve certain tasks.

Guidelines are recommendation actions and operational guides to personnel when a specific standard does not apply.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 3: Security Management Practices (page 94).

QUESTION 327

According to private sector data classification levels, how would salary levels and medical information be classified?

A. Public.
B. Internal Use Only.
C. Restricted.
D. Confidential.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Typically there are three to four levels of information classification used by most organizations:
Confidential: Information that, if released or disclosed outside of the organization, would create severe problems for the organization. For example, information that provides a competitive advantage is important to the technical or financial success (like trade secrets, intellectual property, or research designs), or protects the privacy of individuals would be considered confidential. Information may include payroll information, health records, credit information, formulas, technical designs, restricted regulatory information, senior management internal correspondence, or business strategies or plans. These may also be called top secret, privileged, personal, sensitive, or highly confidential. In other words this information is ok within a defined group in the company such as marketing or sales, but is not suited for release to anyone else in the company without permission.

The following answers are incorrect:

Public: Information that may be disclosed to the general public without concern for harming the company, employees, or business partners. No special protections are required, and information in this category is sometimes referred to as unclassified. For example, information that is posted to a company's public Internet site, publicly released announcements, marketing materials, cafeteria menus, and any internal documents that would not present harm to the company if they were disclosed would be classified as public. While there is little concern for confidentiality, integrity and availability should be considered.

Internal Use Only: Information that could be disclosed within the company, but could harm the company if disclosed externally. Information such as customer lists, vendor pricing, organizational policies, standards and procedures, and internal organization announcements would need baseline security protections, but do not rise to the level of protection as confidential information. In other words, the information may be used freely within the company but any unapproved use outside the company can pose a chance of harm.

Restricted: Information that requires the utmost protection or, if discovered by unauthorized personnel, would cause irreparable harm to the organization would have the highest level of classification. There may be very few pieces of information like this within an organization, but data classified at this level requires all the access control and protection mechanisms available to the organization. Even when information classified at this level exists, there will be few copies of it

Reference(s) Used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 952-976). Auerbach Publications. Kindle Edition.

QUESTION 328
Which of the following would be the best criterion to consider in determining the classification of an information asset?

A. Value
B. Age
C. Useful life
D. Personal association

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Information classification should be based on the value of the information to the organization and its sensitivity (reflection of how much damage would accrue due to disclosure).

Age is incorrect. While age might be a consideration in some cases, the guiding principles should be value and sensitivity.

Useful life. While useful lifetime is relevant to how long data protections should be applied, the classification is based on information value and sensitivity.

Personal association is incorrect. Information classification decisions should be based on value of the information and its sensitiviry.

References
CBK, pp. 101 - 102.

QUESTION 329
Which of the following is not a responsibility of an information (data) owner?

A. Determine what level of classification the information requires.
B. Periodically review the classification assignments against business needs.
C. Delegate the responsibility of data protection to data custodians.
D. Running regular backups and periodically testing the validity of the backup data.

Correct Answer: D

Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
This responsibility would be delegated to a data custodian rather than being performed directly by the information owner.

"Determine what level of classification the information requires" is incorrect. This is one of the major responsibilities of an information owner.

"Periodically review the classification assignments against business needs" is incorrect. This is one of the major responsibilities of an information owner.

"Delegates responsibility of maintenance of the data protection mechanisms to the data custodian" is incorrect. This is a responsibility of the information owner.

References:
CBK p. 105.
AIO3, p. 53-54, 960

QUESTION 330
Which of the following embodies all the detailed actions that personnel are required to follow?

A. Standards
B. Guidelines
C. Procedures
D. Baselines

Correct Answer: C
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
Procedures are step-by-step instructions in support of of the policies, standards, guidelines and baselines. The procedure indicates how the policy will be implemented and who does what to accomplish the tasks."

Standards is incorrect. Standards are a "Mandatory statement of minimum requirements that support some part of a policy, the standards in this case is your own company standards and not standards such as the ISO standards"

Guidelines is incorrect. "Guidelines are discretionary or optional controls used to enable individuals to make judgments with respect to security actions."

Baselines is incorrect. Baselines "are a minimum acceptable level of security. This minimum is implemented using specific rules necessary to implement the security controls in support of the policy and standards." For example, requiring a password of at leat 8 character would be an example. Requiring all users to have a minimun of an antivirus, a personal firewall, and an anti spyware tool could be another example.

References:

CBK, pp. 12 - 16. Note especially the discussion of the "hammer policy" on pp. 16-17 for the differences between policy, standard, guideline and procedure.
AIO3, pp. 88-93.

QUESTION 331
Which of the following choices describe a condition when RAM and Secondary storage are used together?

A. Primary storage
B. Secondary storage
C. Virtual storage
D. Real storage

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Virtual storage a service provided by the operating system where it uses a combination of RAM and disk storage to simulate a much larger address space than is actually present. Infrequently used portions of memory are paged out by being written to secondary storage and paged back in when required by a running program.

Most OS's have the ability to simulate having more main memory than is physically available in the system. This is done by storing part of the data on secondary storage, such as a disk. This can be considered a virtual page. If the data requested by the system is not currently in main memory, a page fault is taken. This condition triggers the OS handler. If the virtual address is a valid one, the OS will locate the physical page, put the right information in that page, update the translation table, and then try the request again. Some other page might be swapped out to make room. Each process may have its own separate virtual address space along with its own mappings and protections.

The following are incorrect answers:
Primary storage is incorrect. Primary storage refers to the combination of RAM, cache and the processor registers. Primary Storage The data waits for processing by the processors, it sits in a staging area called primary storage. Whether implemented as memory, cache, or registers (part of the CPU), and regardless of its location, primary storage stores data that has a high probability of being requested by the CPU, so it is usually faster than long-term, secondary storage. The location where data is stored is denoted by its physical memory address. This memory register identifier remains constant and is independent of the value stored there. Some examples of primary storage devices include random-access memory (RAM), synchronous dynamic random-access memory (SDRAM), and read-only memory (ROM). RAM is volatile, that is, when the system shuts down, it flushes the data in RAM although recent research has shown that data may still be retrievable. Contrast this

Secondary storage is incorrect. Secondary storage holds data not currently being used by the CPU and is used when data must be stored for an extended period of time using high-capacity, nonvolatile storage. Secondary storage includes disk, floppies, CD's, tape, etc. While secondary storage includes basically anything different from primary storage, virtual memory's use of secondary storage is usually confined to high-speed disk storage.

Real storage is incorrect. Real storage is another word for primary storage and distinguishes physical memory from virtual memory.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17164-17171). Auerbach Publications. Kindle Edition.

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17196-17201). Auerbach Publications. Kindle Edition.

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 17186-17187). Auerbach Publications. Kindle Edition.

QUESTION 332
Which of the following statements pertaining to protection rings is false?

A. They provide strict boundaries and definitions on what the processes that work within each ring can access.
B. Programs operating in inner rings are usually referred to as existing in a privileged mode.
C. They support the CIA triad requirements of multitasking operating systems.
D. They provide users with a direct access to peripherals

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In computer science, hierarchical protection domains, often called protection rings, are mechanisms to protect data and functionality from faults (fault tolerance) and malicious behaviour (computer security). This approach is diametrically opposite to that of capability-based security.

Computer operating systems provide different levels of access to resources. A protection ring is one of two or more hierarchical levels or layers of privilege within the architecture of a computer system. This is generally hardware-enforced by some CPU architectures that provide different CPU modes at the hardware or microcode level.

Rings are arranged in a hierarchy from most privileged (most trusted, usually numbered zero) to least privileged (least trusted, usually with the highest ring number). On most operating systems, Ring 0 is the level with the most privileges and interacts most directly with the physical hardware such as the CPU and memory.

Special gates between rings are provided to allow an outer ring to access an inner ring's resources in a predefined manner, as opposed to allowing arbitrary usage. Correctly gating access between rings can improve security by preventing programs from one ring or privilege level from misusing resources intended for programs in another. For example, spyware running as a user program in Ring 3 should be prevented from turning on a web camera without informing the user, since hardware access should be a Ring 1 function reserved for device drivers. Programs such as web browsers running in higher numbered rings must request access to the network, a resource restricted to a lower numbered ring.

"They provide strict boundaries and definitions on what the processes that work within each ring can access" is incorrect. This is in fact one of the characteristics of a ring protection system.

"Programs operating in inner rings are usually referred to as existing in a privileged mode" is incorrect. This is in fact one of the characteristics of a ring protection system.

"They support the CIA triad requirements of multitasking operating systems" is incorrect. This is in fact one of the characteristics of a ring protection system.

Reference(s) used for this question:

CBK, pp. 310-311
AIO3, pp. 253-256
AIOv4 Security Architecture and Design (pages 308 - 310)
AIOv5 Security Architecture and Design (pages 309 - 312)

QUESTION 333
What is it called when a computer uses more than one CPU in parallel to execute instructions?

A. Multiprocessing
B. Multitasking
C. Multithreading
D. Parallel running

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

A system with multiple processors is called a multiprocessing system.

Multitasking is incorrect. Multitasking involves sharing the processor amoung all ready processes. Though it appears to the user that multiple processes are executing at the same time, only one process is running at any point in time.

Multithreading is incorrect. The developer can structure a program as a collection of independent threads to achieve better concurrency. For example, one thread of a program might be performing a calculation while another is waiting for additional input from the user.

"Parallel running" is incorrect. This is not a real term and is just a distraction.

References:

CBK, pp. 315-316
AIO3, pp. 234 - 239

QUESTION 334
What can be defined as an abstract machine that mediates all access to objects by subjects to ensure that subjects have the necessary access rights and to protect objects from unauthorized access?

A. The Reference Monitor
B. The Security Kernel
C. The Trusted Computing Base
D. The Security Domain

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The reference monitor refers to abstract machine that mediates all access to objects by subjects.

This question is asking for the concept that governs access by subjects to objects, thus the reference monitor is the best answer. While the security kernel is similar in nature, it is what actually enforces the concepts outlined in the reference monitor.

In operating systems architecture a reference monitor concept defines a set of design requirements on a reference validation mechanism, which enforces an access control policy over subjects' (e.g., processes and users) ability to perform operations (e.g., read and write) on objects (e.g., files and sockets) on a system. The properties of a reference monitor are:

The reference validation mechanism must always be invoked (complete mediation). Without this property, it is possible for an attacker to bypass the mechanism and violate the security policy.

The reference validation mechanism must be tamperproof (tamperproof). Without this property, an attacker can undermine the mechanism itself so that the security policy is not correctly enforced.

The reference validation mechanism must be small enough to be subject to analysis and tests, the completeness of which can be assured (verifiable). Without this property, the mechanism might be flawed in such a way that the policy is not enforced.

For example, Windows 3.x and 9x operating systems were not built with a reference monitor, whereas the Windows NT line, which also includes Windows 2000 and Windows XP, was designed to contain a reference monitor, although it is not clear that its properties (tamperproof, etc.) have ever been independently verified, or what level of computer security it was intended to provide.

The claim is that a reference validation mechanism that satisfies the reference monitor concept will correctly enforce a system's access control policy, as it must be invoked to mediate all security-sensitive operations, must not be tampered, and has undergone complete analysis and testing to verify correctness. The abstract model of a reference monitor has been widely applied to any type of system that needs to enforce access control, and is considered to express the necessary and sufficient properties for any system making this security claim.

According to Ross Anderson, the reference monitor concept was introduced by James Anderson in an influential 1972 paper.

Systems evaluated at B3 and above by the Trusted Computer System Evaluation Criteria (TCSEC) must enforce the reference monitor concept.

The reference monitor, as defined in AIO V5 (Harris) is: "an access control concept that refers to an abstract machine that mediates all access to objects by subjects."

The security kernel, as defined in AIO V5 (Harris) is: "the hardware, firmware, and software elements of a trusted computing based (TCB) that implement the reference monitor concept. The kernel must mediate all access between subjects and objects, be protected from modification, and be verifiable as correct."

The trusted computing based (TCB), as defined in AIO V5 (Harris) is: "all of the protection mechanisms within a computer system (software, hardware, and firmware) that are responsible for enforcing a security policy."

The security domain, "builds upon the definition of domain (a set of resources available to a subject) by adding the fact that resources withing this logical structure (domain) are working under the same security policy and managed by the same group."

The following answers are incorrect:

"The security kernel" is incorrect. One of the places a reference monitor could be implemented is in the security kernel but this is not the best answer.

"The trusted computing base" is incorrect. The reference monitor is an important concept in the TCB but this is not the best answer.

"The security domain is incorrect." The reference monitor is an important concept in the security domain but this is not the best answer.

Reference(s) used for this question:
Official ISC2 Guide to the CBK, page 324

AIO Version 3, pp. 272 - 274
AIOv4 Security Architecture and Design (pages 327 - 328)
AIOv5 Security Architecture and Design (pages 330 - 331)

Wikipedia article at https://en.wikipedia.org/wiki/Reference_monitor

QUESTION 335
Which of the following is not a method to protect objects and the data within the objects?

A. Layering
B. Data mining
C. Abstraction
D. Data hiding

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Data mining is used to reveal hidden relationships, patterns and trends by running queries on large data stores.

Data mining is the act of collecting and analyzing large quantities of information to determine patterns of use or behavior and use those patterns to form conclusions about past, current, or future behavior. Data mining is typically used by large organizations with large databases of customer or consumer behavior. Retail and credit companies will use data mining to identify buying patterns or trends in geographies, age groups, products, or services. Data mining is essentially the statistical analysis of general information in the absence of specific data.

The following are incorrect answers:

They are incorrect as they all apply to Protecting Objects and the data within them. Layering, abstraction and data hiding are related concepts that can work together to produce modular software that implements an organizations security policies and is more reliable in operation.

Layering is incorrect. Layering assigns specific functions to each layer and communication between layers is only possible through well-defined interfaces. This helps preclude tampering in violation of security policy. In computer programming, layering is the organization of programming into separate functional components that interact in some sequential and hierarchical way, with each layer usually having an interface only to the layer above it and the layer below it.

Abstraction is incorrect. Abstraction "hides" the particulars of how an object functions or stores information and requires the object to be manipulated through welldefined interfaces that can be designed to enforce security policy. Abstraction involves the removal of characteristics from an entity in order to easily represent its essential properties.

Data hiding is incorrect. Data hiding conceals the details of information storage and manipulation within an object by only exposing well defined interfaces to the information rather than the information itslef. For example, the details of how passwords are stored could be hidden inside a password object with exposed interfaces such as check_password, set_password, etc. When a password needs to be verified, the test password is passed to the check_password method and a boolean (true/false) result is returned to indicate if the password is correct without revealing any details of how/where the real passwords are stored. Data hiding maintains activities at different security levels to separate these levels from each other.

The following reference(s) were used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 27535-27540). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 4269-4273). Auerbach Publications. Kindle Edition.

QUESTION 336
What is called the formal acceptance of the adequacy of a system's overall security by the management?

A. Certification
B. Acceptance
C. Accreditation
D. Evaluation

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

Accreditation is the authorization by management to implement software or systems in a production environment. This authorization may be either provisional or full.

The following are incorrect answers:

Certification is incorrect. Certification is the process of evaluating the security stance of the software or system against a selected set of standards or policies. Certification is the technical evaluation of a product. This may precede accreditation but is not a required precursor.

Acceptance is incorrect. This term is sometimes used as the recognition that a piece of software or system has met a set of functional or service level criteria (the new payroll system has passed its acceptance test). Certification is the better tem in this context.

Evaluation is incorrect. Evaluation is certainly a part of the certification process but it is not the best answer to the question.

Reference(s) used for this question:
The Official Study Guide to the CBK from ISC2, pages 559-560

AIO3, pp. 314 - 317
AIOv4 Security Architecture and Design (pages 369 - 372)
AIOv5 Security Architecture and Design (pages 370 - 372)

QUESTION 337
Which property ensures that only the intended recipient can access the data and nobody else?

A. Confidentiality
B. Capability
C. Integrity
D. Availability

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Confidentiality is defined as the property that ensures that only the intended recipient can access the data and nobody else. It is usually achieve using cryptogrphic methods, tools, and protocols.

Confidentiality supports the principle of “least privilege” by providing that only authorized individuals, processes, or systems should have access to information on a need-to-know basis. The level of access that an authorized individual should have is at the level necessary for them to do their job. In recent years, much press

has been dedicated to the privacy of information and the need to protect it from individuals, who may be able to commit crimes by viewing the information. Identity theft is the act of assuming one's identity through knowledge of confidential information obtained from various sources.

The following are incorrect answers:
Capability is incorrect. Capability is relevant to access control. Capability-based security is a concept in the design of secure computing systems, one of the existing security models. A capability (known in some systems as a key) is a communicable, unforgeable token of authority. It refers to a value that references an object along with an associated set of access rights. A user program on a capability-based operating system must use a capability to access an object. Capability-based security refers to the principle of designing user programs such that they directly share capabilities with each other according to the principle of least privilege, and to the operating system infrastructure necessary to make such transactions efficient and secure.

Integrity is incorrect. Integrity protects information from unauthorized modification or loss.
Availability is incorrect. Availability assures that information and services are available for use by authorized entities according to the service level objective.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 9345-9349). Auerbach Publications. Kindle Edition. http://en.wikipedia.org/wiki/Capability-based_security

QUESTION 338
Making sure that the data has not been changed unintentionally, due to an accident or malice is:

A. Integrity.
B. Confidentiality.
C. Availability.
D. Auditability.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Integrity refers to the protection of information from unauthorized modification or deletion.

Confidentiality is incorrect. Confidentiality refers to the protection of information from unauthorized disclosure.

Availability is incorrect. Availability refers to the assurance that information and services will be available to authorized users in accordance with the service level objective.

Auditability is incorrect. Auditability refers to the ability to trace an action to the identity that performed it and identify the date and time at which it occurred.

References:

CBK, pp. 5 - 6
AIO3, pp. 56 - 57

QUESTION 339
Which of the following are the steps usually followed in the development of documents such as security policy, standards and procedures?

A. design, development, publication, coding, and testing.
B. design, evaluation, approval, publication, and implementation.
C. initiation, evaluation, development, approval, publication, implementation, and maintenance.
D. feasibility, development, approval, implementation, and integration.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The common steps used the the development of security policy are initiation of the project, evaluation, development, approval, publication, implementation, and maintenance. The other choices listed are the phases of the software development life cycle and not the step used to develop ducuments such as Policies, Standards, etc...

Reference: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 3, 2002, Auerbach Publications.

QUESTION 340
What is the goal of the Maintenance phase in a common development process of a security policy?

A. to review the document on the specified review date
B. publication within the organization
C. to write a proposal to management that states the objectives of the policy
D. to present the document to an approving body

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

"publication within the organization" is the goal of the Publication Phase "write a proposal to management that states the objectives of the policy" is part of Initial and Evaluation Phase "Present the document to an approving body" is part of Approval Phase.

Reference: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 3, 2002, Auerbach Publications.
Also: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 8: Business Continuity Planning and Disaster Recovery Planning (page 286).

QUESTION 341
What is the difference between Advisory and Regulatory security policies?

A. there is no difference between them
B. regulatory policies are high level policy, while advisory policies are very detailed
C. Advisory policies are not mandated. Regulatory policies must be implemented.
D. Advisory policies are mandated while Regulatory policies are not

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Advisory policies are security polices that are not mandated to be followed but are strongly suggested, perhaps with serious consequences defined for failure to follow them (such as termination, a job action warning, and so forth). A company with such policies wants most employees to consider these policies mandatory.

Most policies fall under this broad category.
Advisory policies can have many exclusions or application levels. Thus, these policies can control some employees more than others, according to their roles and responsibilities within that organization. For example, a policy that requires a certain procedure for transaction processing might allow for an alternative procedure under certain, specified conditions.

Regulatory
Regulatory policies are security policies that an organization must implement due to compliance, regulation, or other legal requirements. These companies might be financial institutions, public utilities, or some other type of organization that operates in the public interest. These policies are usually very detailed and are specific to the industry in which the organization operates. Regulatory polices commonly have two main purposes:

1. To ensure that an organization is following the standard procedures or base practices of operation in its specific industry
2. To give an organization the confidence that it is following the standard and accepted industry policy

Informative

Informative policies are policies that exist simply to inform the reader. There are no implied or specified requirements, and the audience for this information could be certain internal (within the organization) or external parties. This does not mean that the policies are authorized for public consumption but that they are general enough to be distributed to external parties (vendors accessing an extranet, for example) without a loss of confidentiality.

References:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 12, Chapter 1: Security Management Practices.

also see:
The CISSP Prep Guide:Mastering the Ten Domains of Computer Security by Ronald L. Krutz, Russell Dean Vines, Edward M. Stroz

also see: http://i-data-recovery.com/information-security/information-security-policies-standards-guidelines-and-procedures

QUESTION 342
What is the main purpose of Corporate Security Policy?

A. To transfer the responsibility for the information security to all users of the organization
B. To communicate management's intentions in regards to information security
C. To provide detailed steps for performing specific actions
D. To provide a common framework for all development activities

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A Corporate Security Policy is a high level document that indicates what are management`s intentions in regard to Information Security within the organization. It is high level in purpose, it does not give you details about specific products that would be use, specific steps, etc..

The organization’s requirements for access control should be defined and documented in its security policies. Access rules and rights for each user or group of users should be clearly stated in an access policy statement. The access control policy should minimally consider:

Statements of general security principles and their applicability to the organization
Security requirements of individual enterprise applications, systems, and services
Consistency between the access control and information classification policies of different systems and networks
Contractual obligations or regulatory compliance regarding protection of assets
Standards defining user access profiles for organizational roles

Details regarding the management of the access control system

As a Certified Information System Security Professional (CISSP) you would be involved directly in the drafting and coordination of security policies, standards and supporting guidelines, procedures, and baselines.

Guidance provided by the CISSP for technical security issues, and emerging threats are considered for the adoption of new policies. Activities such as interpretation of government regulations and industry trends and analysis of vendor solutions to include in the security architecture that advances the security of the organization are performed by the CISSP as well.

The following are incorrect answers:

To transfer the responsibility for the information security to all users of the organization is bogus. You CANNOT transfer responsibility, you can only tranfer authority. Responsibility will also sit with upper management. The keyworks ALL and USERS is also an indication that it is the wrong choice.

To provide detailed steps for performing specific actions is also a bogus detractor. A step by step document is referred to as a procedure. It details how to accomplish a specific task.

To provide a common framework for all development activities is also an invalid choice. Security Policies are not restricted only to development activities.

Reference Used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 1551-1565). Auerbach Publications. Kindle Edition.

and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 9109-9112). Auerbach Publications. Kindle Edition.

QUESTION 343
Which of the following is not a component of a Operations Security "triples"?

A. Asset
B. Threat
C. Vulnerability
D. Risk

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Operations Security domain is concerned with triples - threats, vulnerabilities and assets.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 216.

QUESTION 344
When two or more separate entities (usually persons) operating in concert to protect sensitive functions or information must combine their knowledge to gain access to an asset, this is known as?

A. Dual Control
B. Need to know
C. Separation of duties
D. Segragation of duties

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The question mentions clearly "operating together". Which means the BEST answer is Dual Control.

Two mechanisms necessary to implement high integrity environments where separation of duties is paramount are dual control or split knowledge.

Dual control enforces the concept of keeping a duo responsible for an activity. It requires more than one employee available to perform a task. It utilizes two or more separate entities (usually persons), operating together, to protect sensitive functions or information.

Whenever the dual control feature is limited to something you know., it is often called split knowledge (such as part of the password, cryptographic keys etc.) Split knowledge is the unique “what each must bring” and joined together when implementing dual control.

To illustrate, let say you have a box containing petty cash is secured by one combination lock and one keyed lock. One employee is given the combination to the combo lock and another employee has possession of the correct key to the keyed lock. In order to get the cash out of the box both employees must be present at the cash box at the same time. One cannot open the box without the other. This is the aspect of dual control.

On the other hand, split knowledge is exemplified here by the different objects (the combination to the combo lock and the correct physical key), both of which are unique and necessary, that each brings to the meeting.

This is typically used in high value transactions / activities (as per the organizations risk appetite) such as:

Approving a high value transaction using a special user account, where the password of this user account is split into two and managed by two different staff. Both staff should be present to enter the password for a high value transaction. This is often combined with the separation of duties principle. In this case, the

posting of the transaction would have been performed by another staff. This leads to a situation where collusion of at least 3 people are required to make a fraud transaction which is of high value.

Payment Card and PIN printing is separated by SOD principles. Now the organization can even enhance the control mechanism by implementing dual control / split knowledge. The card printing activity can be modified to require two staff to key in the passwords for initiating the printing process. Similarly, PIN printing authentication can also be made to be implemented with dual control. Many Host Security modules (HSM) comes with built in controls for dual controls where physical keys are required to initiate the PIN printing process.

Managing encryption keys is another key area where dual control / split knowledge to be implemented.

PCI DSS defines Dual Control as below. This is more from a cryptographic perspective, still useful:

Dual Control: Process of using two or more separate entities (usually persons) operating in concert to protect sensitive functions or information. Both entities are equally responsible for the physical protection of materials involved in vulnerable transactions. No single person is permitted to access or use the materials (for example, the cryptographic key). For manual key generation, conveyance, loading, storage, and retrieval, dual control requires dividing knowledge of the key among the entities. (See also Split Knowledge).

Split knowledge: Condition in which two or more entities separately have key components that individually convey no knowledge of the resultant cryptographic key.

It is key for information security professionals to understand the differences between Dual Control and Separation of Duties. Both complement each other, but are not the same.

The following were incorrect answers:

Segregation of Duties address the splitting of various functions within a process to different users so that it will not create an opportunity for a single user to perform conflicting tasks.

For example, the participation of two or more persons in a transaction creates a system of checks and balances and reduces the possibility of fraud considerably. So it is important for an organization to ensure that all tasks within a process has adequate separation.

Let us look at some use cases of segregation of duties

A person handling cash should not post to the accounting records
A loan officer should not disburse loan proceeds for loans they approved
Those who have authority to sign cheques should not reconcile the bank accounts
The credit card printing personal should not print the credit card PINs
Customer address changes must be verified by a second employee before the change can be activated.

In situations where the separation of duties are not possible, because of lack of staff, the senior management should set up additional measure to offset the lack of adequate controls.

To summarise, Segregation of Duties is about Separating the conflicting duties to reduce fraud in an end to end function.

Need To Know (NTK):
The term "need to know", when used by government and other organizations (particularly those related to the military), describes the restriction of data which is considered very sensitive. Under need-to-know restrictions, even if one has all the necessary official approvals (such as a security clearance) to access certain information, one would not be given access to such information, unless one has a specific need to know; that is, access to the information must be necessary for the conduct of one's official duties. As with most security mechanisms, the aim is to make it difficult for unauthorized access to occur, without inconveniencing legitimate access. Need-to-know also aims to discourage "browsing" of sensitive material by limiting access to the smallest possible number of people.

EXAM TIP: HOW TO DECIPHER THIS QUESTION

First, you probably nototiced that both Separation of Duties and Segregation of Duties are synonymous with each others. This means they are not the BEST answers for sure. That was an easy first step.

For the exam remember:

Separation of Duties is synonymous with Segregation of

Duties Dual Control is synonymous with Split Knowledge

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 16048-16078). Auerbach Publications. Kindle Edition. and
http://www.ciso.in/dual-control-or-segregation-of-duties/

QUESTION 345
Which of the following is NOT a proper component of Media Viability Controls?

A. Storage
B. Writing
C. Handling
D. Marking

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Media Viability Controls include marking, handling and storage.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 231.

QUESTION 346
A channel within a computer system or network that is designed for the authorized transfer of information is identified as a(n)?

A. Covert channel
B. Overt channel
C. Opened channel
D. Closed channel

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
An overt channel is a path within a computer system or network that is designed for the authorized transfer of data. The opposite would be a covert channel which is an unauthorized path.

A covert channel is a way for an entity to receive information in an unauthorized manner. It is an information flow that is not controlled by a security mechanism. This type of information path was not developed for communication; thus, the system does not properly protect this path, because the developers never envisioned information being passed in this way. Receiving information in this manner clearly violates the system's security policy.

All of the other choices are bogus detractors.

Reference(s) used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 219.
and
Shon Harris, CISSP All In One (AIO), 6th Edition , page 380
and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 378). McGraw-Hill. Kindle Edition.

QUESTION 347
When attempting to establish Liability, which of the following would be describe as performing the ongoing maintenance necessary to keep something in proper working order, updated, effective, or to abide by what is commonly expected in a situation?

A. Due care

B. Due concern
C. Due diligence
D. Due practice

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
My friend JD Murray at Techexams.net has a nice definition of both, see his explanation below:

Oh, I hate these two. It's like describing the difference between "jealously" and "envy." Kinda the same thing but not exactly. Here it goes:

Due diligence is performing reasonable examination and research before committing to a course of action. Basically, "look before you leap." In law, you would perform due diligence by researching the terms of a contract before signing it. The opposite of due diligence might be "haphazard" or "not doing your homework."

Due care is performing the ongoing maintenance necessary to keep something in proper working order, or to abide by what is commonly expected in a situation. This is especially important if the due care situation exists because of a contract, regulation, or law. The opposite of due care is "negligence."

In summary, Due Diligence is Identifying threats and risks while Due Care is Acting upon findings to mitigate risks

EXAM TIP:
The Due Diligence refers to the steps taken to identify risks that exists within the environment. This is base on best practices, standards such as ISO 27001, ISO 17799, and other consensus. The first letter of the word Due and the word Diligence should remind you of this. The two letters are DD = Do Detect.

In the case of due care, it is the actions that you have taken (implementing, designing, enforcing, updating) to reduce the risks identified and keep them at an acceptable level. The same apply here, the first letters of the work Due and the work Care are DC. Which should remind you that DC = Do correct.

The other answers are only detractors and not valid.

Reference(s) used for this question:
CISSP Study Guide, Syngress, By Eric Conrad, Page 419
HARRIS, Shon, All-In-One CISSP Certification Exam Guide Fifth Edition, McGraw-Hill, Page 49 and 110.
and
Corporate; (Isc)² (2010-04-20). Official (ISC)2 Guide to the CISSP CBK, Second Edition ((ISC)2 Press) (Kindle Locations 11494-11504). Taylor & Francis. Kindle Edition.
and
My friend JD Murray at Techexams.net

QUESTION 348
What can best be described as a domain of trust that shares a single security policy and single management?

A. The reference monitor
B. A security domain
C. The security kernel
D. The security perimeter

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A security domain is a domain of trust that shares a single security policy and single management.

The term security domain just builds upon the definition of domain by adding the fact that resources within this logical structure (domain) are working under the same security policy and managed by the same group.

So, a network administrator may put all of the accounting personnel, computers, and network resources in Domain 1 and all of the management personnel, computers, and network resources in Domain 2. These items fall into these individual containers because they not only carry out similar types of business functions, but also, and more importantly, have the same type of trust level. It is this common trust level that allows entities to be managed by one single security policy.

The different domains are separated by logical boundaries, such as firewalls with ACLs, directory services making access decisions, and objects that have their own ACLs indicating which individuals and groups can carry out operations on them.

All of these security mechanisms are examples of components that enforce the security policy for each domain. Domains can be architected in a hierarchical manner that dictates the relationship between the different domains and the ways in which subjects within the different domains can communicate. Subjects can access resources in domains of equal or lower trust levels.

The following are incorrect answers:

The reference monitor is an abstract machine which must mediate all access to subjects to objects, be protected from modification, be verifiable as correct, and is always invoked. Concept that defines a set of design requirements of a reference validation mechanism (security kernel), which enforces an access control policy over subjects' (processes, users) ability to perform operations (read, write, execute) on objects (files, resources) on a system. The reference monitor components must be small enough to test properly and be tamperproof.

The security kernel is the hardware, firmware and software elements of a trusted computing base that implement the reference monitor concept.

The security perimeter includes the security kernel as well as other security-related system functions that are within the boundary of the trusted computing base. System elements that are outside of the security perimeter need not be trusted. not every process and resource falls within the TCB, so some of these components fall outside of an imaginary boundary referred to as the security perimeter. A security perimeter is a boundary that divides the trusted from the untrusted. For the system to stay in a secure and trusted state, precise communication standards must be developed to ensure that when a component within the TCB needs to communicate with a component outside the TCB, the communication cannot expose the system to unexpected security compromises. This type of communication is handled and controlled through interfaces.

Reference(s) used for this question:

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 28548-28550). McGraw-Hill. Kindle Edition.

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 7873-7877). McGraw-Hill. Kindle Edition.

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition , Access Control, Page 214-217
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Security Architecture and Design (Kindle Locations 1280-1283). . Kindle Edition.

TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.
AIO 6th edition chapter 3 access control page 214-217 defines Security domains. Reference monitor, Security Kernel, and Security Parameter are defined in Chapter 4, Security Architecture and Design.

QUESTION 349
Which of the following describes a technique in which a number of processor units are employed in a single computer system to increase the performance of the system in its application environment above the performance of a single processor of the same kind?

A. Multitasking
B. Multiprogramming
C. Pipelining
D. Multiprocessing

Correct Answer: D
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
Multiprocessing is an organizational technique in which a number of processor units are employed in a single computer system to increase the performance of the system in its application environment above the performance of a single processor of the same kind. In order to cooperate on a single application or class of applications, the processors share a common resource. Usually this resource is primary memory, and the multiprocessor is called a primary memory multiprocessor. A system in which each processor has a private (local) main memory and shares secondary (global) memory with the others is a secondary memory multiprocessor, sometimes called a multicomputer system because of the looser coupling between processors. The more common multiprocessor

systems incorporate only processors of the same type and performance and thus are called homogeneous multiprocessors; however, heterogeneous multiprocessors are also employed. A special case is the attached processor, in which a second processor module is attached to a first processor in a closely coupled fashion so that the first can perform input/output and operating system functions, enabling the attached processor to concentrate on the application workload.

The following were incorrect answers:

Multiprogramming: The interleaved execution of two or more programs by a computer, in which the central processing unit executes a few instructions from each program in succession.

Multitasking: The concurrent operation by one central processing unit of two or more processes.

Pipelining: A procedure for processing instructions in a computer program more rapidly, in which each instruction is divided into numerous small stages, and a population of instructions are in various stages at any given time. One instruction does not have to wait for the previous one to complete all of the stages before it gets into the pipeline. It would be similiar to an assembly chain in the real world.

References:

TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

http://www.answers.com/Q/multiprocessing?cat=technology
http://www.answers.com/multitasking?cat=biz-fin
http://www.answers.com/pipelining?cat=technology

QUESTION 350
What can best be described as an abstract machine which must mediate all access to subjects to objects?

A. A security domain
B. The reference monitor
C. The security kernel
D. The security perimeter

Correct Answer: B
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
The reference monitor is an abstract machine which must mediate all access to subjects to objects, be protected from modification, be verifiable as correct, and is always invoked. The security kernel is the hardware, firmware and software elements of a trusted computing base that implement the reference monitor concept.

The security perimeter includes the security kernel as well as other security-related system functions that are within the boundary of the trusted computing base. System elements that are outside of the security perimeter need not be trusted. A security domain is a domain of trust that shares a single security policy and single management.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 351
Who is responsible for implementing user clearances in computer-based information systems at the B3 level of the TCSEC rating ?

A. Security administrators
B. Operators
C. Data owners
D. Data custodians

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Security administrator functions include user-oriented activities such as setting user clearances, setting initial password, setting other security characteristics for new users or changing security profiles for existing users. Data owners have the ultimate responsibility for protecting data, thus determining proper user access rights to data.
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 352
Buffer overflow and boundary condition errors are subsets of which of the following?

A. Race condition errors.
B. Access validation errors.
C. Exceptional condition handling errors.
D. Input validation errors.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In an input validation error, the input received by a system is not properly checked, resulting in a vulnerability that can be exploited by sending a certain input sequence. There are two important types of input validation errors: buffer overflows (input received is longer than expected input length) and boundary condition

error (where an input received causes the system to exceed an assumed boundary). A race condition occurs when there is a delay between the time when a system checks to see if an operation is allowed by the security model and the time when the system actually performs the operation. In an access validation error, the system is vulnerable because the access control mechanism is faulty. In an exceptional condition handling error, the system somehow becomes vulnerable due to an exceptional condition that has arisen.

Source: DUPUIS, Clement, Access Control Systems and Methodology CISSP Open Study Guide, version 1.0, march 2002 (page 105).

QUESTION 353
Ensuring least privilege does not require:

A. Identifying what the user's job is.
B. Ensuring that the user alone does not have sufficient rights to subvert an important process.
C. Determining the minimum set of privileges required for a user to perform their duties.
D. Restricting the user to required privileges and nothing more.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Ensuring that the user alone does not have sufficient rights to subvert an important process is a concern of the separation of duties principle and it does not concern the least privilege principle.
Source: DUPUIS, Clément, Access Control Systems and Methodology CISSP Open Study Guide, version 1.0, march 2002 (page 33).

QUESTION 354
Who is responsible for initiating corrective measures and capabilities used when there are security violations?

A. Information systems auditor
B. Security administrator
C. Management
D. Data owners

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Management is responsible for protecting all assets that are directly or indirectly under their control.

They must ensure that employees understand their obligations to protect the company's assets, and implement security in accordance with the company policy. Finally, management is responsible for initiating corrective actions when there are security violations.
Source: HARE, Chris, Security management Practices CISSP Open Study Guide, version 1.0, april 1999.

QUESTION 355
What can best be defined as high-level statements, beliefs, goals and objectives?

A. Standards
B. Policies
C. Guidelines
D. Procedures

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Policies are high-level statements, beliefs, goals and objectives and the general means for their attainment for a specific subject area. Standards are mandatory activities, action, rules or regulations designed to provide policies with the support structure and specific direction they require to be effective. Guidelines are more general statements of how to achieve the policies objectives by providing a framework within which to implement procedures. Procedures spell out the specific steps of how the policy and supporting standards and how guidelines will be implemented.
Source: HARE, Chris, Security management Practices CISSP Open Study Guide, version 1.0, april 1999.

QUESTION 356
In an organization, an Information Technology security function should:

A. Be a function within the information systems function of an organization.
B. Report directly to a specialized business unit such as legal, corporate security or insurance.
C. Be lead by a Chief Security Officer and report directly to the CEO.
D. Be independent but report to the Information Systems function.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

In order to offer more independence and get more attention from management, an IT security function should be independent from IT and report directly to the CEO. Having it report to a specialized business unit (e.g. legal) is not recommended as it promotes a low technology view of the function and leads people to believe that it is someone else's problem.

Source: HARE, Chris, Security management Practices CISSP Open Study Guide, version 1.0, april 1999.

QUESTION 357
IT security measures should:

A. Be complex
B. Be tailored to meet organizational security goals.
C. Make sure that every asset of the organization is well protected.
D. Not be developed in a layered fashion.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In general, IT security measures are tailored according to an organization's unique needs. While numerous factors, such as the overriding mission requirements, and guidance, are to be considered, the fundamental issue is the protection of the mission or business from IT security-related, negative impacts. Because IT security needs are not uniform, system designers and security practitioners should consider the level of trust when connecting to other external networks and internal sub-domains. Recognizing the uniqueness of each system allows a layered security strategy to be used - implementing lower assurance solutions with lower costs to protect less critical systems and higher assurance solutions only at the most critical areas.

The more complex the mechanism, the more likely it may possess exploitable flaws. Simple mechanisms tend to have fewer exploitable flaws and require less maintenance. Further, because configuration management issues are simplified, updating or replacing a simple mechanism becomes a less intensive process.

Security designs should consider a layered approach to address or protect against a specific threat or to reduce a vulnerability. For example, the use of a packetfiltering router in conjunction with an application gateway and an intrusion detection system combine to increase the work-factor an attacker must expend to successfully attack the system. Adding good password controls and adequate user training improves the system's security posture even more.

The need for layered protections is especially important when commercial-off-the-shelf (COTS) products are used. Practical experience has shown that the current state-of-the-art for security quality in COTS products does not provide a high degree of protection against sophisticated attacks. It is possible to help mitigate this situation by placing several controls in series, requiring additional work by attackers to accomplish their goals.

Source: STONEBURNER, Gary & al, National Institute of Standards and Technology (NIST), NIST Special Publication 800-27, Engineering Principles for Information Technology Security (A Baseline for Achieving Security), June 2001 (pages 9-10).

QUESTION 358
Which of the following does not address Database Management Systems (DBMS) Security?

A. Perturbation
B. Cell suppression
C. Padded cells
D. Partitioning

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Padded cells complement Intrusion Detection Systems (IDSs) and are not related to DBMS security. Padded cells are simulated environments to which IDSs seamlessly transfer detected attackers and are designed to convince an attacker that the attack is going according to the plan. Cell suppression is a technique used against inference attacks by not revealing information in the case where a statistical query produces a very small result set. Perturbation also addresses inference attacks but involves making minor modifications to the results to a query. Partitioning involves splitting a database into two or more physical or logical parts; especially relevant for multilevel secure databases.

Source: LaROSA, Jeanette (domain leader), Application and System Development Security CISSP Open Study Guide, version 3.0, January 2002.

QUESTION 359
Which of the following security modes of operation involves the highest risk?

A. Compartmented Security Mode
B. Multilevel Security Mode
C. System-High Security Mode
D. Dedicated Security Mode

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
In multilevel mode, two or more classification levels of data exist, some people are not cleared for all the data on the system.

Risk is higher because sensitive data could be made available to someone not validated as being capable of maintaining secrecy of that data (i.e., not cleared for it).

In other security modes, all users have the necessary clearance for all data on the system.
Source: LaROSA, Jeanette (domain leader), Application and System Development Security CISSP Open Study Guide, version 3.0, January 2002.

QUESTION 360
During which phase of an IT system life cycle are security requirements developed?

A. Operation
B. Initiation
C. Functional design analysis and Planning
D. Implementation

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The software development life cycle (SDLC) (sometimes referred to as the System Development Life Cycle) is the process of creating or altering software systems, and the models and methodologies that people use to develop these systems.

The NIST SP 800-64 revision 2 has within the description section of para 3.2.1:

This section addresses security considerations unique to the second SDLC phase. Key security activities for this phase include:

• Conduct the risk assessment and use the results to supplement the baseline security controls;
• Analyze security requirements;
• Perform functional and security testing;
• Prepare initial documents for system certification and accreditation; and
• Design security architecture.

Reviewing this publication you may want to pick development/acquisition. Although initiation would be a decent choice, it is correct to say during this phase you would only brainstorm the idea of security requirements. Once you start to develop and acquire hardware/software components then you would also develop the security controls for these. The Shon Harris reference below is correct as well.

Shon Harris' Book (All-in-One CISSP Certification Exam Guide) divides the SDLC differently:

Project initiation

Functional design analysis and planning
System design specifications
Software development
Installation
Maintenance support
Revision and replacement

According to the author (Shon Harris), security requirements should be developed during the functional design analysis and planning phase.
SDLC POSITIONING FROM NIST 800-64

FIGURE 2-1. POSITIONING SECURITY CONSIDERATIONS

SDLC Positioning in the enterprise
Information system security processes and activities provide valuable input into managing IT systems and their development, enabling risk identification, planning and mitigation. A risk management approach involves continually balancing the protection of agency information and assets with the cost of security controls and mitigation strategies throughout the complete information system development life cycle (see Figure 2-1 above). The most effective way to implement risk management is to identify critical assets and operations, as well as systemic vulnerabilities across the agency. Risks are shared and not bound by organization, revenue source, or topologies. Identification and verification of critical assets and operations and their interconnections can be achieved through the system security planning process, as well as through the compilation of information from the Capital Planning and Investment Control (CPIC) and Enterprise Architecture (EA) processes to establish insight into the agency's vital business operations, their supporting assets, and existing interdependencies and relationships.

With critical assets and operations identified, the organization can and should perform a business impact analysis (BIA). The purpose of the BIA is to relate systems and assets with the critical services they provide and assess the consequences of their disruption. By identifying these systems, an agency can manage

security effectively by establishing priorities. This positions the security office to facilitate the IT program's cost-effective performance as well as articulate its business impact and value to the agency.

SDLC OVERVIEW FROM NIST 800-64
SDLC Overview from NIST 800-64 Revision 2

NIST 800-64 Revision 2 is one publication within the NISTstandards that I would recommend you look at for more details about the SDLC. It describe in great details what activities would take place and they have a nice diagram for each of the phases of the SDLC. You will find a copy at:

http://csrc.nist.gov/publications/nistpubs/800-64-Rev2/SP800-64-Revision2.pdf

DISCUSSION:
Different sources present slightly different info as far as the phases names are concerned.

People sometimes gets confused with some of the NIST standards. For example NIST 800-64 Security Considerations in the Information System Development Life Cycle has slightly different names, the activities mostly remains the same.

NIST clearly specifies that Security requirements would be considered throughout ALL of the phases. The keyword here is considered, if a question is about which phase they would be developed than Functional Design Analysis would be the correct choice.

Within the NIST standard they use different phase, howeverr under the second phase you will see that they talk specifically about Security Functional requirements analysis which confirms it is not at the initiation stage so it become easier to come out with the answer to this question. Here is what is stated:

The security functional requirements analysis considers the system security environment, including the enterprise information security policy and the enterprise security architecture. The analysis should address all requirements for confidentiality, integrity, and availability of information, and should include a review of all legal, functional, and other security requirements contained in applicable laws, regulations, and guidance.

At the initiation step you would NOT have enough detailed yet to produce the Security Requirements. You are mostly brainstorming on all of the issues listed but you do not develop them all at that stage.

By considering security early in the information system development life cycle (SDLC), you may be able to avoid higher costs later on and develop a more secure system from the start.

NIST says:
NIST`s Information Technology Laboratory recently issued Special Publication (SP) 800-64, Security Considerations in the Information System Development Life Cycle, by Tim Grance, Joan Hash, and Marc Stevens, to help organizations include security requirements in their planning for every phase of the system life cycle, and to select, acquire, and use appropriate and cost-effective security controls.

I must admit this is all very tricky but reading skills and paying attention to KEY WORDS is a must for this exam.

References:

HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, Fifth Edition, Page 956
and
NIST S-64 Revision 2 at http://csrc.nist.gov/publications/nistpubs/800-64-Rev2/SP800-64-Revision2.pdf
and http://www.mks.com/resources/resource-pages/software-development-life-cycle-sdlc-system-development

QUESTION 361
Which of the following phases of a system development life-cycle is most concerned with establishing a good security policy as the foundation for design?

A. Development/acquisition
B. Implementation
C. Initiation
D. Maintenance

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

A security policy is an important document to develop while designing an information system. The security policy begins with the organization's basic commitment to information security formulated as a general policy statement.

The policy is then applied to all aspects of the system design or security solution. The policy identifies security goals (e.g., confidentiality, integrity, availability, accountability, and assurance) the system should support, and these goals guide the procedures, standards and controls used in the IT security architecture design.

The policy also should require definition of critical assets, the perceived threat, and security-related roles and responsibilities.

Source: STONEBURNER, Gary & al, National Institute of Standards and Technology (NIST), NIST Special Publication 800-27, Engineering Principles for Information Technology Security (A Baseline for Achieving Security), June 2001 (page 6).

QUESTION 362
When considering an IT System Development Life-cycle, security should be:

A. Mostly considered during the initiation phase.
B. Mostly considered during the development phase.
C. Treated as an integral part of the overall system design.
D. Added once the design is completed.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Security must be considered in information system design. Experience has shown it is very difficult to implement security measures properly and successfully after a system has been developed, so it should be integrated fully into the system life-cycle process. This includes establishing security policies, understanding the resulting security requirements, participating in the evaluation of security products, and finally in the engineering, design, implementation, and disposal of the system.

Source: STONEBURNER, Gary & al, National Institute of Standards and Technology (NIST), NIST Special Publication 800-27, Engineering Principles for Information Technology Security (A Baseline for Achieving Security), June 2001 (page 7).

QUESTION 363
Risk reduction in a system development life-cycle should be applied:

A. Mostly to the initiation phase.
B. Mostly to the development phase.
C. Mostly to the disposal phase.

D. Equally to all phases.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Risk is defined as the combination of the probability that a particular threat source will exploit, or trigger, a particular information system vulnerability and the resulting mission impact should this occur. Previously, risk avoidance was a common IT security goal. That changed as the nature of the risk became better understood. Today, it is recognized that elimination of all risk is not cost-effective. A cost-benefit analysis should be conducted for each proposed control. In some cases, the benefits of a more secure system may not justify the direct and indirect costs. Benefits include more than just prevention of monetary loss; for example, controls may be essential for maintaining public trust and confidence. Direct costs include the cost of purchasing and installing a given technology; indirect costs include decreased system performance and additional training. The goal is to enhance mission/business capabilities by managing mission/business risk to an acceptable level.

Source: STONEBURNER, Gary & al, National Institute of Standards and Technology (NIST), NIST Special Publication 800-27, Engineering Principles for Information Technology Security (A Baseline for Achieving Security), June 2001 (page 8).

QUESTION 364
Which of the following phases of a system development life-cycle is most concerned with maintaining proper authentication of users and processes to ensure appropriate access control decisions?

A. Development/acquisition
B. Implementation
C. Operation/Maintenance
D. Initiation

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The operation phase of an IT system is concerned with user authentication.

Authentication is the process where a system establishes the validity of a transmission, message, or a means of verifying the eligibility of an individual, process, or machine to carry out a desired action, thereby ensuring that security is not compromised by an untrusted source.

It is essential that adequate authentication be achieved in order to implement security policies and achieve security goals. Additionally, level of trust is always an issue when dealing with cross-domain interactions. The solution is to establish an authentication policy and apply it to cross-domain interactions as required.

Source: STONEBURNER, Gary & al, National Institute of Standards and Technology (NIST), NIST Special Publication 800-27, Engineering Principles for Information Technology Security (A Baseline for Achieving Security), June 2001 (page 15).

QUESTION 365
What can be defined as: It confirms that users' needs have been met by the supplied solution ?

A. Accreditation
B. Certification
C. Assurance
D. Acceptance

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Acceptance confirms that users' needs have been met by the supplied solution. Verification and Validation informs Acceptance by establishing the evidence – set against acceptance criteria - to determine if the solution meets the users' needs. Acceptance should also explicitly address any integration or interoperability requirements involving other equipment or systems. To enable acceptance every user and system requirement must have a 'testable' characteristic.

Accreditation is the formal acceptance of security, adequacy, authorization for operation and acceptance of existing risk. Accreditation is the formal declaration by a Designated Approving Authority (DAA) that an IS is approved to operate in a particular security mode using a prescribed set of safeguards to an acceptable level of risk.

Certification is the formal testing of security safeguards and assurance is the degree of confidence that the implemented security measures work as intended. The certification is a Comprehensive evaluation of the technical and nontechnical security features of an IS and other safeguards, made in support of the accreditation process, to establish the extent to which a particular design and implementation meets a set of specified ecurity requirements.

Assurance is the descriptions of the measures taken during development and evaluation of the product to assure compliance with the claimed security functionality. For example, an evaluation may require that all source code is kept in a change management system, or that full functional testing is performed. The Common Criteria provides a catalogue of these, and the requirements may vary from one evaluation to the next. The requirements for particular targets or types of products are documented in the Security Targets (ST) and Protection Profiles (PP), respectively.

Source: ROTHKE, Ben, CISSP CBK Review presentation on domain 4, August 1999.

and
Official ISC2 Guide to the CISSP CBK, Second Edition, on page 211.
and
http://www.aof.mod.uk/aofcontent/tactical/randa/content/randaintroduction.htm

QUESTION 366
Which of the following statements pertaining to the security kernel is incorrect?

A. The security kernel is made up of mechanisms that fall under the TCB and implements and enforces the reference monitor concept.
B. The security kernel must provide isolation for the processes carrying out the reference monitor concept and they must be tamperproof.
C. The security kernel must be small enough to be able to be tested and verified in a complete and comprehensive manner.
D. The security kernel is an access control concept, not an actual physical component.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The reference monitor, not the security kernel is an access control concept.

The security kernel is made up of software, and firmware components that fall within the TCB and implements and enforces the reference monitor concept. The security kernel mediates all access and functions between subjects and objects. The security kernel is the core of the TCB and is the most commonly used approach to building trusted computing systems.

There are three main requirements of the security kernel:

• It must provide isolation for the processes carrying out the reference monitor concept, and the processes must be tamperproof.
• It must be invoked for every access attempt and must be impossible to circumvent. Thus, the security kernel must be implemented in a complete and foolproof way.
• It must be small enough to be able to be tested and verified in a complete and comprehensive manner.

The following answers are incorrect:
The security kernel is made up of mechanisms that fall under the TCB and implements and enforces the reference monitor concept. Is incorrect because this is the definition of the security kernel.

The security kernel must provide isolation for the processes carrying out the reference monitor concept and they must be tamperproof. Is incorrect because this is one of the three requirements that make up the security kernel.

The security kernel must be small enough to be able to be tested and verified in a complete and comprehensive manner. Is incorrect because this is one of the three requirements that make up the security kernel.

QUESTION 367
Which of the following best corresponds to the type of memory addressing where the address location that is specified in the program instruction contains the address of the final desired location?

A. Direct addressing
B. Indirect addressing
C. Indexed addressing
D. Program addressing

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Indirect addressing is when the address location that is specified in the program instruction contains the address of the final desired location. Direct addressing is when a portion of primary memory is accessed by specifying the actual address of the memory location. Indexed addressing is when the contents of the address defined in the program's instruction is added to that of an index register. Program addressing is not a defined memory addressing mode.

Source: WALLHOFF, John, CBK#6 Security Architecture and Models (CISSP Study Guide), April 2002 (page 2).

QUESTION 368
Which of the following security mode of operation does NOT require all users to have the clearance for all information processed on the system?

A. Compartmented security mode
B. Multilevel security mode
C. System-high security mode
D. Dedicated security mode

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The multilevel security mode permits two or more classification levels of information to be processed at the same time when all the users do not have the clearance of formal approval to access all the information being processed by the system.

In dedicated security mode, all users have the clearance or authorization and need-to-know to all data processed within the system.

In system-high security mode, all users have a security clearance or authorization to access the information but not necessarily a need-to-know for all the information processed on the system (only some of the data).

In compartmented security mode, all users have the clearance to access all the information processed by the system, but might not have the need-to-know and formal access approval.

Generally, Security modes refer to information systems security modes of operations used in mandatory access control (MAC) systems. Often, these systems contain information at various levels of security classification.

The mode of operation is determined by:

- The type of users who will be directly or indirectly accessing the system.
- The type of data, including classification levels, compartments, and categories, that are processed on the system.

The type of levels of users, their need to know, and formal access approvals that the users will have.

Dedicated security mode
In this mode of operation, all users must have:

- Signed NDA for ALL information on the system.
- Proper clearance for ALL information on the system.
- Formal access approval for ALL information on the system.
- A valid need to know for ALL information on the system.

All users can access ALL data.
System high security mode

In this mode of operation, all users must have:

- Signed NDA for ALL information on the system.
- Proper clearance for ALL information on the system.
- Formal access approval for ALL information on the system.

A valid need to know for SOME information on the system.

All users can access SOME data, based on their need to know.

Compartmented security mode
In this mode of operation, all users must have:

- Signed NDA for ALL information on the system.
- Proper clearance for ALL information on the system.
- Formal access approval for SOME information they will access on the system.

A valid need to know for SOME information on the system.

All users can access SOME data, based on their need to know and formal access approval.

Multilevel security mode
In this mode of operation, all users must have:

Signed NDA for ALL information on the system.
Proper clearance for SOME information on the system.
Formal access approval for SOME information on the system.
A valid need to know for SOME information on the system.

All users can access SOME data, based on their need to know, clearance and formal access approval.

REFERENCES:

WALLHOFF, John, CBK#6 Security Architecture and Models (CISSP Study Guide), April 2002 (page 6).
and
http://en.wikipedia.org/wiki/Security_Modes

QUESTION 369
What prevents a process from accessing another process' data?

A. Memory segmentation B.
Process isolation
C. The reference monitor
D. Data hiding

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Process isolation is where each process has its own distinct address space for its application code and data. In this way, it is possible to prevent each process from accessing another process' data. This prevents data leakage, or modification to the data while it is in memory. Memory segmentation is a virtual memory management mechanism. The reference monitor is an abstract machine that mediates all accesses to objects by subjects. Data hiding, also known as information hiding, is a mechanism that makes information available at one processing level is not available at another level.

Source: HARE, Chris, Security Architecture and Models, Area 6 CISSP Open Study Guide, January 2002.

QUESTION 370

What can best be defined as the sum of protection mechanisms inside the computer, including hardware, firmware and software?

A. Trusted system
B. Security kernel
C. Trusted computing base
D. Security perimeter

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Trusted Computing Base (TCB) is defined as the total combination of protection mechanisms within a computer system. The TCB includes hardware, software, and firmware. These are part of the TCB because the system is sure that these components will enforce the security policy and not violate it.

The security kernel is made up of hardware, software, and firmware components at fall within the TCB and implements and enforces the reference monitor concept.

Reference:
AIOv4 Security Models and Architecture pgs 268, 273

QUESTION 371
A trusted system does NOT involve which of the following?

A. Enforcement of a security policy.
B. Sufficiency and effectiveness of mechanisms to be able to enforce a security policy.
C. Assurance that the security policy can be enforced in an efficient and reliable manner.
D. Independently-verifiable evidence that the security policy-enforcing mechanisms are sufficient and effective.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A trusted system is one that meets its intended security requirements. It involves sufficiency and effectiveness, not necessarily efficiency, in enforcing a security policy. Put succinctly, trusted systems have (1) policy, (2) mechanism, and (3) assurance.
Source: HARE, Chris, Security Architecture and Models, Area 6 CISSP Open Study Guide, January 2002.

QUESTION 372
What can be described as an imaginary line that separates the trusted components of the TCB from those elements that are NOT trusted?

A. The security kernel
B. The reference monitor
C. The security perimeter
D. The reference perimeter

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The security perimeter is the imaginary line that separates the trusted components of the kernel and the Trusted Computing Base (TCB) from those elements that are not trusted. The reference monitor is an abstract machine that mediates all accesses to objects by subjects. The security kernel can be software, firmware or hardware components in a trusted system and is the actual instantiation of the reference monitor. The reference perimeter is not defined and is a distracter.

Source: HARE, Chris, Security Architecture and Models, Area 6 CISSP Open Study Guide, January 2002.

QUESTION 373
A Security Kernel is defined as a strict implementation of a reference monitor mechanism responsible for enforcing a security policy. To be secure, the kernel must meet three basic conditions, what are they? A. Confidentiality, Integrity, and Availability

B. Policy, mechanism, and assurance
C. Isolation, layering, and abstraction
D. Completeness, Isolation, and Verifiability

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A security kernel is responsible for enforcing a security policy. It is a strict implementation of a reference monitor mechanism. The architecture of a kernel operating system is typically layered, and the kernel should be at the lowest and most primitive level.

It is a small portion of the operating system through which all references to information and all changes to authorizations must pass. In theory, the kernel implements access control and information flow control between implemented objects according to the security policy.

To be secure, the kernel must meet three basic conditions:

completeness (all accesses to information must go through the kernel), isolation (the kernel itself must be protected from any type of unauthorized access), and verifiability (the kernel must be proven to meet design specifications).

The reference monitor, as noted previously, is an abstraction, but there may be a reference validator, which usually runs inside the security kernel and is responsible for performing security access checks on objects, manipulating privileges, and generating any resulting security audit messages.

A term associated with security kernels and the reference monitor is the trusted computing base (TCB). The TCB is the portion of a computer system that contains all elements of the system responsible for supporting the security policy and the isolation of objects. The security capabilities of products for use in the TCB can be verified through various evaluation criteria, such as the earlier Trusted Computer System Evaluation Criteria (TCSEC) and the current Common Criteria standard.

Many of these security terms—reference monitor, security kernel, TCB—are defined loosely by vendors for purposes of marketing literature. Thus, it is necessary for security professionals to read the small print and between the lines to fully understand what the vendor is offering in regard to security features.

TIP FOR THE EXAM:
The terms Security Kernel and Reference monitor are synonymous but at different levels.
As it was explained by Diego:

While the Reference monitor is the concept, the Security kernel is the implementation of such concept (via hardware, software and firmware means).

The two terms are the same thing, but on different levels: one is conceptual, one is "technical"

The following are incorrect answers:
Confidentiality, Integrity, and Availability

Policy, mechanism, and assurance
Isolation, layering, and abstraction

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 13858-13875). Auerbach Publications. Kindle Edition.

QUESTION 374
What can best be defined as the detailed examination and testing of the security features of an IT system or product to ensure that they work correctly and effectively and do not show any logical vulnerabilities, such as evaluation criteria?

A. Acceptance testing

B. Evaluation
C. Certification
D. Accreditation

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Evaluation as a general term is described as the process of independently assessing a system against a standard of comparison, such as evaluation criteria. Evaluation criterias are defined as a benchmark, standard, or yardstick against which accomplishment, conformance, performance, and suitability of an individual, hardware, software, product, or plan, as well as of risk-reward ratio is measured.

What is computer security evaluation?
Computer security evaluation is the detailed examination and testing of the security features of an IT system or product to ensure that they work correctly and effectively and do not show any logical vulnerabilities. The Security Target determines the scope of the evaluation. It includes a claimed level of Assurance that determines how rigorous the evaluation is.

Criteria
Criteria are the "standards" against which security evaluation is carried out. They define several degrees of rigour for the testing and the levels of assurance that each confers. They also define the formal requirements needed for a product (or system) to meet each Assurance level.

TCSEC
The US Department of Defense published the first criteria in 1983 as the Trusted Computer Security Evaluation Criteria (TCSEC), more popularly known as the "Orange Book". The current issue is dated 1985. The US Federal Criteria were drafted in the early 1990s as a possible replacement but were never formally adopted.

ITSEC
During the 1980s, the United Kingdom, Germany, France and the Netherlands produced versions of their own national criteria. These were harmonised and published as the Information Technology Security Evaluation Criteria (ITSEC). The current issue, Version 1.2, was published by the European Commission in June 1991. In September 1993, it was followed by the IT Security Evaluation Manual (ITSEM) which specifies the methodology to be followed when carrying out ITSEC evaluations.

Common Criteria
The Common Criteria represents the outcome of international efforts to align and develop the existing European and North American criteria. The Common Criteria project harmonises ITSEC, CTCPEC (Canadian Criteria) and US Federal Criteria (FC) into the Common Criteria for Information Technology Security Evaluation (CC) for use in evaluating products and systems and for stating security requirements in a standardised way. Increasingly it is replacing national and regional criteria with a worldwide set accepted by the International Standards Organisation (ISO15408).

The following answer were not applicable:

Certification is the process of performing a comprehensive analysis of the security features and safeguards of a system to establish the extent to which the security requirements are satisfied. Shon Harris states in her book that Certification is the comprehensive technical evaluation of the security components and their compliance for the purpose of accreditation.

Wikipedia describes it as: Certification is a comprehensive evaluation of the technical and non-technical security controls (safeguards) of an information system to support the accreditation process that establishes the extent to which a particular design and implementation meets a set of specified security requirements

Accreditation is the official management decision to operate a system. Accreditation is the formal declaration by a senior agency official (Designated Accrediting Authority (DAA) or Principal Accrediting Authority (PAA)) that an information system is approved to operate at an acceptable level of risk, based on the implementation of an approved set of technical, managerial, and procedural security controls (safeguards).
Acceptance testing refers to user testing of a system before accepting delivery.

Reference(s) used for this question:

HARE, Chris, Security Architecture and Models, Area 6 CISSP Open Study Guide, January 2002.
and
https://en.wikipedia.org/wiki/Certification_and_Accreditation
and
http://www.businessdictionary.com/definition/evaluation-criteria.html
and
http://www.cesg.gov.uk/products_services/iacs/cc_and_itsec/secevalcriteria.shtml

QUESTION 375
Which of the following is NOT a common integrity goal?

A. Prevent unauthorized users from making modifications.
B. Maintain internal and external consistency.
C. Prevent authorized users from making improper modifications.
D. Prevent paths that could lead to inappropriate disclosure.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Inappropriate disclosure is a confidentiality, not an integrity goal.
All of the other choices above are integrity goals addressed by the Clark-Wilson integrity model.

The Clark-Wilson model is an integrity model that addresses all three integrity goals:

1. prevent unauthorized users from making modifications,
2. prevent authorized users from making improper modifications, and
3. maintain internal and external consistency through auditing.

NOTE: Biba address only the first goal of integrity above

Reference(s) used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 1384). McGraw-Hill. Kindle Edition.

QUESTION 376
When it comes to magnetic media sanitization, what difference can be made between clearing and purging information?

A. Clearing completely erases the media whereas purging only removes file headers, allowing the recovery of files.
B. Clearing renders information unrecoverable by a keyboard attack and purging renders information unrecoverable against laboratory attack.
C. They both involve rewriting the media.
D. Clearing renders information unrecoverable against a laboratory attack and purging renders information unrecoverable to a keyboard attack.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The removal of information from a storage medium is called sanitization. Different kinds of sanitization provide different levels of protection. A distinction can be made between clearing information (rendering it unrecoverable by a keyboard attack) and purging (rendering it unrecoverable against laboratory attack).

There are three general methods of purging media: overwriting, degaussing, and destruction.

There should be continuous assurance that sensitive information is protected and not allowed to be placed in a circumstance wherein a possible compromise can occur. There are two primary levels of threat that the protector of information must guard against: keyboard attack (information scavenging through system software capabilities) and laboratory attack (information scavenging through laboratory means). Procedures should be implemented to address these threats before the Automated Information System (AIS) is procured, and the procedures should be continued throughout the life cycle of the AIS.

Reference(s) use for this question:
SWANSON, Marianne & GUTTMAN, Barbara, National Institute of Standards and Technology (NIST), NIST Special Publication 800-14, Generally Accepted Principles and Practices for Securing Information Technology Systems, September 1996 (page 26).

and

A guide to understanding Data Remanence in Automated Information Systems

QUESTION 377
What is the main issue with media reuse?

A. Degaussing
B. Data remanence
C. Media destruction
D. Purging

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The main issue with media reuse is data remanence, where residual information still resides on a media that has been erased. Degaussing, purging and destruction are ways to handle media that contains data that is no longer needed or used.
Source: WALLHOFF, John, CBK#10 Physical Security (CISSP Study Guide), April 2002 (page 5).

QUESTION 378
Which of the following should NOT be performed by an operator?

A. Implementing the initial program load
B. Monitoring execution of the system
C. Data entry
D. Controlling job flow

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Under the principle of separation of duties, an operator should not be performing data entry. This should be left to data entry personnel.

System operators represent a class of users typically found in data center environments where mainframe systems are used. They provide day-to-day operations of the mainframe environment, ensuring that scheduled jobs are running effectively and troubleshooting problems that may arise. They also act as the arms and legs of the mainframe environment, load and unloading tape and results of job print runs. Operators have elevated privileges, but less than those of system

administrators. If misused, these privileges may be used to circumvent the system's security policy. As such, use of these privileges should be monitored through audit logs.

Some of the privileges and responsibilities assigned to operators include:

Implementing the initial program load: This is used to start the operating system. The boot process or initial program load of a system is a critical time for ensuring system security. Interruptions to this process may reduce the integrity of the system or cause the system to crash, precluding its availability.

Monitoring execution of the system: Operators respond to various events, to include errors, interruptions, and job completion messages.

Volume mounting: This allows the desired application access to the system and its data.

Controlling job flow: Operators can initiate, pause, or terminate programs. This may allow an operator to affect the scheduling of jobs. Controlling job flow involves the manipulation of configuration information needed by the system. Operators with the ability to control a job or application can cause output to be altered or diverted, which can threaten the confidentiality.

Bypass label processing: This allows the operator to bypass security label information to run foreign tapes (foreign tapes are those from a different data center that would not be using the same label format that the system could run). This privilege should be strictly controlled to prevent unauthorized access.

Renaming and relabeling resources: This is sometimes necessary in the mainframe environment to allow programs to properly execute. Use of this privilege should be monitored, as it can allow the unauthorized viewing of sensitive information.

Reassignment of ports and lines: Operators are allowed to reassign ports or lines. If misused, reassignment can cause program errors, such as sending sensitive output to an unsecured location. Furthermore, an incidental port may be opened, subjecting the system to an attack through the creation of a new entry point into the system.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 19367-19395). Auerbach Publications. Kindle Edition.

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Which of the following should be performed by an operator?

A. Changing profiles
B. Approving changes
C. Adding and removal of users
D. Installing system software

Answer: D

Of the listed tasks, installing system software is the only task that should normally be performed by an operator in a properly segregated environment.
Source: MOSHER, Richard & ROTHKE, Ben, CISSP CBK Review presentation on domain 7.

QUESTION 379
Which of the following is not appropriate in addressing object reuse?

A. Degaussing magnetic tapes when they're no longer needed.
B. Deleting files on disk before reusing the space.
C. Clearing memory blocks before they are allocated to a program or data.
D. Clearing buffered pages, documents, or screens from the local memory of a terminal or printer.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Object reuse requirements, applying to systems rated TCSEC C2 and above, are used to protect files, memory, and other objects in a trusted system from being accidentally accessed by users who are not authorized to access them. Deleting files on disk merely erases file headers in a directory structure. It does not clear data from the disk surface, thus making files still recoverable. All other options involve clearing used space, preventing any unauthorized access.

Source: RUSSEL, Deborah & GANGEMI, G.T. Sr., Computer Security Basics, O'Reilly, July 1992 (page 119).

QUESTION 380
Who of the following is responsible for ensuring that proper controls are in place to address integrity, confidentiality, and availability of IT systems and data?

A. Business and functional managers
B. IT Security practitioners
C. System and information owners
D. Chief information officer

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The system and information owners are responsible for ensuring that proper controls are in place to address integrity, confidentiality, and availability of the IT systems and data they own. IT security practitioners are responsible for proper implementation of security requirements in their IT systems.
Source: STONEBURNER, Gary et al., NIST Special publication 800-30, Risk management Guide for Information Technology Systems, 2001 (page 6).

QUESTION 381
An effective information security policy should not have which of the following characteristic?

A. Include separation of duties
B. Be designed with a short- to mid-term focus
C. Be understandable and supported by all stakeholders
D. Specify areas of responsibility and authority

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
An effective information security policy should be designed with a long-term focus. All other characteristics apply.
Source: ALLEN, Julia H., The CERT Guide to System and Network Security Practices, Addison-Wesley, 2001, Appendix B, Practice-Level Policy Considerations (page 397).

QUESTION 382
Which of the following choice is NOT normally part of the questions that would be asked in regards to an organization's information security policy?

A. Who is involved in establishing the security policy?
B. Where is the organization's security policy defined?
C. What are the actions that need to be performed in case of a disaster?
D. Who is responsible for monitoring compliance to the organization's security policy?

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Actions to be performed in case of a disaster are not normally part of an information security policy but part of a Disaster Recovery Plan (DRP).

Only personnel implicated in the plan should have a copy of the Disaster Recovery Plan whereas everyone should be aware of the contents of the organization's information security policy.
Source: ALLEN, Julia H., The CERT Guide to System and Network Security Practices, Addison-Wesley, 2001, Appendix B, Practice-Level Policy Considerations (page 398).

QUESTION 383

The property of a system or a system resource being accessible and usable upon demand by an authorized system entity, according to performance specifications for the system is referred to as?

A. Confidentiality
B. Availability
C. Integrity
D. Reliability

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
An company security program must:

1) assure that systems and applications operate effectively and provide appropriate confidentiality, integrity, and availability;

2) protect informationcommensurate with the level of risk and magnitude ofharmresulting fromloss, misuse, unauthorized access, or modification.

The property of a system or a system resource being accessible and usable upon demand by an authorized system entity, according to performance specifications for the system; i.e., a system is available if it provides services according to the system design whenever users request them.

The following are incorrect answers:

Confidentiality - The information requires protection from unauthorized disclosure and only the INTENDED recipient should have access to the meaning of the data either in storage or in transit.

Integrity - The information must be protected from unauthorized, unanticipated, or unintentional modification. This includes, but is not limited to:

Authenticity –A third party must be able to verify that the content of a message has not been changed in transit.

Non-repudiation – The origin or the receipt of a specific message must be verifiable by a third party.

Accountability - A security goal that generates the requirement for actions of an entity to be traced uniquely to that entity.

Reference used for this question:

RFC 2828
and

SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (page 5).

QUESTION 384
Which of the following is most concerned with personnel security?

A. Management controls
B. Operational controls
C. Technical controls
D. Human resources controls

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Many important issues in computer security involve human users, designers, implementers, and managers.

A broad range of security issues relates to how these individuals interact with computers and the access and authorities they need to do their jobs. Since operational controls address security methods focusing on mechanisms primarily implemented and executed by people (as opposed to systems), personnel security is considered a form of operational control.

Operational controls are put in place to improve security of a particular system (or group of systems). They often require specialized expertise and often rely upon management activities as well as technical controls. Implementing dual control and making sure that you have more than one person that can perform a task would fall into this category as well.

Management controls focus on the management of the IT security system and the management of risk for a system. They are techniques and concerns that are normally addressed by management.

Technical controls focus on security controls that the computer system executes. The controls can provide automated protection for unauthorized access of misuse, facilitate detection of security violations, and support security requirements for applications and data.

Reference use for this question:

NIST SP 800-53 Revision 4 http://dx.doi.org/10.6028/NIST.SP.800-53r4
You can get it as a word document by clicking HERE
NIST SP 800-53 Revision 4 has superseded the document below:

SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (Page A-18).

QUESTION 385
Which of the following would best classify as a management control?

A. Review of security controls

B. Personnel security
C. Physical and environmental protection
D. Documentation

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Management controls focus on the management of the IT security system and the management of risk for a system.

They are techniques and concerns that are normally addressed by management.
Routine evaluations and response to identified vulnerabilities are important elements of managing the risk of a system, thus considered management controls.

SECURITY CONTROLS: The management, operational, and technical controls (i.e.,safeguards or countermeasures) prescribed for an information system to protect the confidentiality, integrity, and availability of the system and its information.

SECURITY CONTROL BASELINE: The set of minimum security controls defined for a low-impact, moderate-impact,or high-impact information system.

The following are incorrect answers:
Personnel security, physical and environmental protection and documentation are forms of operational controls.

Reference(s) used for this question:

http://csrc.nist.gov/publications/drafts/800-53-rev4/sp800-53-rev4-ipd.pdf
and
FIPS PUB 200 at http://csrc.nist.gov/publications/fips/fips200/FIPS-200-final-march.pdf

QUESTION 386
Which of the following is not a form of passive attack?

A. Scavenging
B. Data diddling
C. Shoulder surfing

D. Sniffing

Correct Answer: B
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
Data diddling involves alteration of existing data and is extremely common. It is one of the easiest types of crimes to prevent by using access and accounting controls, supervision, auditing, separation of duties, and authorization limits. It is a form of active attack. All other choices are examples of passive attacks, only affecting confidentiality.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 10: Law, Investigation, and Ethics (page 645).

QUESTION 387
Which of the following statements pertaining to a security policy is incorrect?

A. Its main purpose is to inform the users, administrators and managers of their obligatory requirements for protecting technology and information assets.
B. It specifies how hardware and software should be used throughout the organization.
C. It needs to have the acceptance and support of all levels of employees within the organization in order for it to be appropriate and effective.
D. It must be flexible to the changing environment.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A security policy would NOT define how hardware and software should be used throughout the organization. A standard or a procedure would provide such details but not a policy.

A security policy is a formal statement of the rules that people who are given access to anorganization's technology and information assets must abide. The policy communicates the security goals to all of the users, the administrators, and the managers. The goals will be largely determined by the following key tradeoffs: services offered versus security provided, ease of use versus security, and cost of security versus risk of loss.

The main purpose of a security policy is to inform the users, the administrators and the managers of their obligatory requirements for protecting technology and information assets.

The policy should specify the mechanisms through which these requirements can be met. Another purpose is to provide a baseline from which to acquire, configure and audit computer systems and networks for compliance with the policy. In order for a security policy to be appropriate and effective, it needs to have the acceptance and support of all levels of employees within the organization. A good security policy must:

• Be able to be implemented through system administration procedures, publishing of acceptable use guidelines, or other appropriate methods
• Be able to be enforced with security tools, where appropriate, and with sanctions, where actual prevention is not technically feasible

• Clearly define the areas of responsibility for the users, the administrators, and the managers
• Be communicated to all once it is established
• Be flexible to the changing environment of a computer network since it is a living document

Reference(s) used for this question:

National Security Agency, Systems and Network Attack Center (SNAC),The 60 Minute Network Security Guide, February 2002, page 7.
or
A local copy is kept at:
https://www.freepracticetests.org/documents/The%2060%20Minute%20Network%20Security%20Guide.pdf

QUESTION 388
Which of the following statements pertaining to software testing is incorrect?

A. Unit testing should be addressed and considered when the modules are being designed.
B. Test data should be part of the specifications.
C. Testing should be performed with live data to cover all possible situations.
D. Test data generators can be used to systematically generate random test data that can be used to test programs.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

Live or actual field data is not recommended for use in the testing procedures because both data types may not cover out of range situations and the correct outputs of the test are unknown. Live data would not be the best data to use because of the lack of anomalies and also because of the risk of exposure to your live data.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 251).

QUESTION 389
Which of the following can be defined as the process of rerunning a portion of the test scenario or test plan to ensure that changes or corrections have not introduced new errors?

A. Unit testing
B. Pilot testing
C. Regression testing
D. Parallel testing

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Regression testing is the process of rerunning a portion of the test scenario or test plan to ensure that changes or corrections have not introduced new errors. The data used in regression testing should be the same as the data used in the original test. Unit testing refers to the testing of an individual program or module. Pilot testing is a preliminary test that focuses only on specific and predetermined aspects of a system. Parallel testing is the process of feeding test data into two systems and comparing the results.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, Chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 300).

QUESTION 390
Which of the following statements pertaining to software testing approaches is correct?

A. A bottom-up approach allows interface errors to be detected earlier.
B. A top-down approach allows errors in critical modules to be detected earlier.
C. The test plan and results should be retained as part of the system's permanent documentation.
D. Black box testing is predicated on a close examination of procedural detail.

Correct Answer: C

Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A bottom-up approach to testing begins testing of atomic units, such as programs or modules, and works upwards until a complete system testing has taken place. It allows errors in critical modules to be found early. A top-down approach allows for early detection of interface errors and raises confidence in the system, as programmers and users actually see a working system. White box testing is predicated on a close examination of procedural detail. Black box testing examines some aspect of the system with little regard for the internal logical structure of the software.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, Chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 300).

Top Down Testing: An approach to integration testing where the component at the top of the component hierarchy is tested first, with lower level components being simulated by stubs. Tested components are then used to test lower level components. The process is repeated until the lowest level components have been tested.

Bottom Up Testing: An approach to integration testing where the lowest level components are tested first, then used to facilitate the testing of higher level components. The process is repeated until the component at the top of the hierarchy is tested.

Black Box Testing: Testing based on an analysis of the specification of a piece of software without reference to its internal workings. The goal is to test how well the component conforms to the published requirements for the component.

QUESTION 391
Which of the following test makes sure the modified or new system includes appropriate access controls and does not introduce any security holes that might compromise other systems?

A. Recovery testing
B. Security testing
C. Stress/volume testing
D. Interface testing

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Security testing makes sure the modified or new system includes appropriate access controls and does not introduce any security holes that might compromise other systems.

Recovery testing checks the system's ability to recover after a software or hardware failure.

Stress/volume testing involves testing an application with large quantities of data in order to evaluate performance during peak hours.
Interface testing evaluates the connection of two or more components that pass information from one area to another.

Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, Chapter 6: Business Application System Development, Acquisition, Implementation and Maintenance (page 300).

QUESTION 392
Which of the following phases of a software development life cycle normally addresses Due Care and Due Diligence?

A. Implementation
B. System feasibility
C. Product design
D. Software plans and requirements

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The software plans and requirements phase addresses threats, vulnerabilities, security requirements, reasonable care, due diligence, legal liabilities, cost/benefit analysis, level of protection desired, test plans.

Implementation is incorrect because it deals with Installing security software, running the system, acceptance testing, security software testing, and complete documentation certification and accreditation (where necessary).

System Feasibility is incorrect because it deals with information security policy, standards, legal issues, and the early validation of concepts.

Product design is incorrect because it deals with incorporating security specifications, adjusting test plans and data,
determining access controls, design documentation, evaluating encryption options, and verification.

Sources:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 252).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 7: Security Life Cycle Components, Figure 7.5 (page 346).

QUESTION 393

Which of the following phases of a software development life cycle normally incorporates the security specifications, determines access controls, and evaluates encryption options?

A. Detailed design
B. Implementation
C. Product design
D. Software plans and requirements

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Product design phase deals with incorporating security specifications, adjusting test plans and data, determining access controls, design documentation, evaluating encryption options, and verification.

Implementation is incorrect because it deals with Installing security software, running the system, acceptance testing, security software testing, and complete documentation certification and accreditation (where necessary).

Detailed design is incorrect because it deals with information security policy, standards, legal issues, and the early validation of concepts.
software plans and requirements is incorrect because it deals with addressesing threats, vulnerabilities, security requirements, reasonable care, due diligence, legal liabilities, cost/benefit analysis, level of protection desired, test plans.

Sources:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 252).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 7: Security Life Cycle Components, Figure 7.5 (page 346).

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At which of the basic phases of the System Development Life Cycle are security requirements formalized?

A. Disposal
B. System Design Specifications
C. Development and Implementation
D. Functional Requirements Definition

Answer: D
During the Functional Requirements Definition the project management and systems development teams will conduct a comprehensive analysis of current and possible future functional requirements to ensure that the new system will meet end-user needs. The teams also review the documents from the project initiation phase and make any revisions or updates as needed. For smaller projects, this phase is often subsumed in the project initiation phase. At this point security requirements should be formalized.

The Development Life Cycle is a project management tool that can be used to plan, execute, and control a software development project usually called the Systems Development Life Cycle (SDLC).

The SDLC is a process that includes systems analysts, software engineers, programmers, and end users in the project design and development. Because there is no industry-wide SDLC, an organization can use any one, or a combination of SDLC methods.

The SDLC simply provides a framework for the phases of a software development project from defining the functional requirements to implementation. Regardless of the method used, the SDLC outlines the essential phases, which can be shown together or as separate elements. The model chosen should be based on the project.

For example, some models work better with long-term, complex projects, while others are more suited for short-term projects. The key element is that a formalized SDLC is utilized.

The number of phases can range from three basic phases (concept, design, and implement) on up.

The basic phases of SDLC are:

Project initiation and planning
Functional requirements definition
System design specifications
Development and implementation

Documentation and common program controls
Testing and evaluation control, (certification and accreditation)
Transition to production (implementation)

The system life cycle (SLC) extends beyond the SDLC to include two additional phases:

Operations and maintenance support (post-installation)
Revisions and system replacement

System Design Specifications

This phase includes all activities related to designing the system and software. In this phase, the system architecture, system outputs, and system interfaces are designed. Data input, data flow, and output requirements are established and security features are designed, generally based on the overall security architecture for the company.

Development and Implementation
During this phase, the source code is generated, test scenarios and test cases are developed, unit and integration testing is conducted, and the program and system are documented for maintenance and for turnover to acceptance testing and production. As well as general care for software quality, reliability, and consistency of operation, particular care should be taken to ensure that the code is analyzed to eliminate common vulnerabilities that might lead to security exploits and other risks.

Documentation and Common Program Controls
These are controls used when editing the data within the program, the types of logging the program should be doing, and how the program versions should be stored. A large number of such controls may be needed, see the reference below for a full list of controls.

Acceptance
In the acceptance phase, preferably an independent group develops test data and tests the code to ensure that it will function within the organization's environment and that it meets all the functional and security requirements. It is essential that an independent group test the code during all applicable stages of development to prevent a separation of duties issue. The goal of security testing is to ensure that the application meets its security requirements and specifications. The security testing should uncover all design and implementation flaws that would allow a user to violate the software security policy and requirements. To ensure test validity, the application should be tested in an environment that simulates the production environment. This should include a security certification package and any user documentation.

Certification and Accreditation (Security Authorization)
Certification is the process of evaluating the security stance of the software or system against a predetermined set of security standards or policies. Certification also examines how well the system performs its intended functional requirements. The certification or evaluation document should contain an analysis of the technical and nontechnical security features and countermeasures and the extent to which the software or system meets the security requirements for its mission and operational environment.

Transition to Production (Implementation)
During this phase, the new system is transitioned from the acceptance phase into the live production environment. Activities during this phase include obtaining security accreditation; training the new users according to the implementation and training schedules; implementing the system, including installation and data conversions; and, if necessary, conducting any parallel operations.

Revisions and System Replacement
As systems are in production mode, the hardware and software baselines should be subject to periodic evaluations and audits. In some instances, problems with the application may not be defects or flaws, but rather additional functions not currently developed in the application. Any changes to the application must follow the same SDLC and be recorded in a change management system. Revision reviews should include security planning and procedures to avoid future problems. Periodic application audits should be conducted and include documenting security incidents when problems occur. Documenting system failures is a valuable resource for justifying future system enhancements.

Below you have the phases used by NIST in it's 800-63 Revision 2 document

As noted above, the phases will vary from one document to another one. For the purpose of the exam use the list provided in the official ISC2 Study book which is presented in short form above. Refer to the book for a more detailed description of activities at each of the phases of the SDLC.

However, all references have very similar steps being used. As mentioned in the official book, it could be as simple as three phases in it's most basic version (concept, design, and implement) or a lot more in more detailed versions of the SDLC. The key thing is to make use of an SDLC.

SDLC phases

Reference(s) used for this question:

NIST SP 800-64 Revision 2 at http://csrc.nist.gov/publications/nistpubs/800-64-Rev2/SP800-64-Revision2.pdf
and
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition: Software Development Security ((ISC)2 Press) (Kindle Locations 134-157). Auerbach Publications. Kindle Edition.

QUESTION 394
Which of the following is less likely to be included in the change control sub-phase of the maintenance phase of a software product?

A. Estimating the cost of the changes requested
B. Recreating and analyzing the problem
C. Determining the interface that is presented to the user
D. Establishing the priorities of requests

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Change control sub-phase includes Recreating and analyzing the problem, Determining the interface that is presented to the user, and Establishing the priorities of requests.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 252).

QUESTION 395
What is the act of obtaining information of a higher sensitivity by combining information from lower levels of sensitivity?

A. Polyinstantiation
B. Inference
C. Aggregation
D. Data mining

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Aggregation is the act of obtaining information of a higher sensitivity by combining information from lower levels of sensitivity.

The incorrect answers are:

Polyinstantiation is the development of a detailed version of an object from another object using different values in the new object.

Inference is the ability of users to infer or deduce information about data at sensitivity levels for which they do not have access privilege.

Data mining refers to searching through a data warehouse for data correlations.

Sources:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 261).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 7: Database Security Issues (page 358).

QUESTION 396
Which expert system operating mode allows determining if a given hypothesis is valid?

A. Blackboard
B. Lateral chaining
C. Forward chaining
D. Backward chaining

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Backward-chaining mode - the expert system backtracks to determine if a given hypothesis is valid. Backward-chaining is generally used when there are a large number of possible solutions relative to the number of inputs.

Incorrect answers are:
In a forward-chaining mode, the expert system acquires information and comes to a conclusion based on that information. Forward-chaining is the reasoning approach that can be used when there is a small number of solutions relative to the number of inputs.

Blackboard is an expert system-reasoning methodology in which a solution is generated by the use of a virtual blackboard, wherein information or potential solutions are placed on the blackboard by a plurality of individuals or expert knowledge sources. As more information is placed on the blackboard in an iterative process, a solution is generated.

Lateral-chaining mode - No such expert system mode.
Sources:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 259).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 7: Expert Systems (page 354).

QUESTION 397
Why does compiled code pose more of a security risk than interpreted code?

A. Because malicious code can be embedded in compiled code and be difficult to detect.

B. If the executed compiled code fails, there is a chance it will fail insecurely.
C. Because compilers are not reliable.

D. There is no risk difference between interpreted code and compiled code.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
From a security standpoint, a compiled program is less desirable than an interpreted one because malicious code can be resident somewhere in the compiled code, and it is difficult to detect in a very large program.

Incorrect answers:

There is a risk difference between interpreted code and compiled code.

Compilers are reliable.
The risk of a program failing insecurely is not the result of compiled or interpreted code.

Sources:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 263).
KRUTZ, Ronald & VINES, Russel, The CISSP Prep Guide: Gold Edition, Wiley Publishing Inc., 2003, Chapter 2: Security Architecture and Models, Software (page 258).

QUESTION 398
Which software development model is actually a meta-model that incorporates a number of the software development models?

A. The Waterfall model
B. The modified Waterfall model
C. The Spiral model
D. The Critical Path Model (CPM)

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The spiral model is actually a meta-model that incorporates a number of the software development models. This model depicts a spiral that incorporates the various phases of software development. The model states that each cycle of the spiral involves the same series of steps for each part of the project. CPM refers to the Critical Path Methodology.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 7: Applications and Systems Development (page 246).

QUESTION 399
Which of the following is used in database information security to hide information?

A. Inheritance
B. Polyinstantiation
C. Polymorphism
D. Delegation

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Polyinstantiation enables a relation to contain multiple tuples with the same primary keys with each instance distinguished by a security level. When this information is inserted into a database, lower-level subjects need to be restricted from this information. Instead of just restricting access, another set of data is created to fool the lower-level subjects into thinking that the information actually means something else.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 11: Application and System Development (page 727).

QUESTION 400
Which of the following computer design approaches is based on the fact that in earlier technologies, the instruction fetch was the longest part of the cycle?

A. Pipelining
B. Reduced Instruction Set Computers (RISC)
C. Complex Instruction Set Computers (CISC)
D. Scalar processors

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Complex Instruction Set Computer (CISC) uses instructions that perform many operations per instruction. It was based on the fact that in earlier technologies, the instruction fetch was the longest part of the cycle. Therefore, by packing more operations into an instruction, the number of fetches could be reduced. Pipelining involves overlapping the steps of different instructions to increase the performance in a computer. Reduced Instruction Set Computers (RISC) involve simpler instructions that require fewer clock cycles to execute. Scalar processors are processors that execute one instruction at a time.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5:

Security Architectures and Models (page 188).

QUESTION 401
What is used to protect programs from all unauthorized modification or executional interference?

A. A protection domain
B. A security perimeter
C. Security labels
D. Abstraction

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A protection domain consists of the execution and memory space assigned to each process. The purpose of establishing a protection domain is to protect programs from all unauthorized modification or executional interference. The security perimeter is the boundary that separates the Trusted Computing Base (TCB) from the remainder of the system. Security labels are assigned to resources to denote a type of classification. Abstraction is a way to protect resources in the fact that it involves viewing system components at a high level and ignoring its specific details, thus performing information hiding.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architecture and Models (page 193).

QUESTION 402
What is called a system that is capable of detecting that a fault has occurred and has the ability to correct the fault or operate around it?

A. A fail safe system
B. A fail soft system
C. A fault-tolerant system
D. A failover system

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:

A fault-tolerant system is capable of detecting that a fault has occurred and has the ability to correct the fault or operate around it. In a fail-safe system, program execution is terminated, and the system is protected from being compromised when a hardware or software failure occurs and is detected. In a fail-soft system, when a hardware or software failure occurs and is detected, selected, non-critical processing is terminated. The term failover refers to switching to a duplicate "hot" backup component in real-time when a hardware or software failure occurs, enabling processing to continue.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5:

Security Architecture and Models (page 196).

QUESTION 403
What is defined as the hardware, firmware and software elements of a trusted computing base that implement the reference monitor concept?

A. The reference monitor
B. Protection rings
C. A security kernel
D. A protection domain

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A security kernel is defined as the hardware, firmware and software elements of a trusted computing base that implement the reference monitor concept. A reference monitor is a system component that enforces access controls on an object. A protection domain consists of the execution and memory space assigned to each process. The use of protection rings is a scheme that supports multiple protection domains.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 5: Security Architecture and Models (page 194).

QUESTION 404
Which of the following rules is least likely to support the concept of least privilege?

A. The number of administrative accounts should be kept to a minimum.
B. Administrators should use regular accounts when performing routine operations like reading mail.
C. Permissions on tools that are likely to be used by hackers should be as restrictive as possible.
D. Only data to and from critical systems and applications should be allowed through the firewall.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Only data to and from critical systems and applications should be allowed through the firewall is a detractor. Critical systems or applications do not necessarily need to have traffic go through a firewall. Even if they did, only the minimum required services should be allowed. Systems that are not deemed critical may also need to have traffic go through the firewall.

Least privilege is a basic tenet of computer security that means users should be given only those rights required to do their jobs or tasks. Least privilege is ensuring that you have the minimum privileges necessary to do a task. An admin NOT using his admin account to check email is a clear example of this.

Reference(s) used for this question:
National Security Agency, Systems and Network Attack Center (SNAC), The 60 Minute Network Security Guide, February 2002, page 9.

QUESTION 405
Which of the following is an unintended communication path that is NOT protected by the system's normal security mechanisms?

A. A trusted path
B. A protection domain
C. A covert channel
D. A maintenance hook

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
A covert channel is an unintended communication path within a system, therefore it is not protected by the system's normal security mechanisms. Covert channels are a secret way to convey information.

Covert channels are addressed from TCSEC level B2.

The following are incorrect answers:

A trusted path is the protected channel that allows a user to access the Trusted Computing Base (TCB) without being compromised by other processes or users.

A protection domain consists of the execution and memory space assigned to each process.

A maintenance hook is a hardware or software mechanism that was installed to permit system maintenance and to bypass the system's security protections.

Reference used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 6: Operations Security (page 219).

QUESTION 406
Which of the following is used to interrupt the opportunity to use or perform collusion to subvert operation for fraudulent purposes?

A. Key escrow
B. Rotation of duties
C. Principle of need-to-know
D. Principle of least privilege

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Job rotations reduce the risk of collusion of activities between individuals. Companies with individuals working with sensitive information or systems where there might be the opportunity for personal gain through collusion can benefit by integrating job rotation with segregation of duties. Rotating the position may uncover activities that the individual is performing outside of the normal operating procedures, highlighting errors or fraudulent behavior.

Rotation of duties is a method of reducing the risk associated with a subject performing a (sensitive) task by limiting the amount of time the subject is assigned to perform the task before being moved to a different task.

The following are incorrect answers:
Key escrow is related to the protection of keys in storage by splitting the key in pieces that will be controlled by different departments. Key escrow is the process of ensuring a third party maintains a copy of a private key or key needed to decrypt information. Key escrow also should be considered mandatory for most organization's use of cryptography as encrypted information belongs to the organization and not the individual; however often an individual's key is used to encrypt the information.

Separation of duties is a basic control that prevents or detects errors and irregularities by assigning responsibility for different parts of critical tasks to separate individuals, thus limiting the effect a single person can have on a system. One individual should not have the capability to execute all of the steps of a particular process. This is especially important in critical business areas, where individuals may have greater access and capability to modify, delete, or add data to the system. Failure to separate duties could result in individuals embezzling money from the company without the involvement of others.

The need-to-know principle specifies that a person must not only be cleared to access classified or other sensitive information, but have requirement for such information to carry out assigned job duties. Ordinary or limited user accounts are what most users are assigned. They should be restricted only to those privileges that are strictly required, following the principle of least privilege. Access should be limited to specific objects following the principle of need-to-know.

The principle of least privilege requires that each subject in a system be granted the most restrictive set of privileges (or lowest clearance) needed for the performance of authorized tasks. Least privilege refers to granting users only the accesses that are required to perform their job functions. Some employees will require greater access than others based upon their job functions. For example, an individual performing data entry on a mainframe system may have no need for Internet access or the ability to run reports regarding the information that they are entering into the system. Conversely, a supervisor may have the need to run reports, but should not be provided the capability to change information in the database.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 10628-10631). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 10635-10638). Auerbach Publications. Kindle Edition.

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Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 10693-10697). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 16338-16341). Auerbach Publications. Kindle Edition.

QUESTION 407
Which of the following is best defined as an administrative declaration by a designated authority that an information system is approved to operate in a particular security configuration with a prescribed set of safeguards?

A. Certification
B. Declaration
C. Audit
D. Accreditation

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Accreditation: is an administrative declaration by a designated authority that an information system is approved to operate in a particular security configuration with a prescribed set of safeguards. It is usually based on a technical certification of the system's security mechanisms.

Certification: Technical evaluation (usually made in support of an accreditation action) of an information system\'s security features and other safeguards to establish the extent to which the system\'s design and implementation meet specified security requirements. Source: SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 408
Which of the following is best defined as a circumstance in which a collection of information items is required to be classified at a higher security level than any of the individual items that comprise it?

A. Aggregation
B. Inference
C. Clustering
D. Collision

Correct Answer: A
Section: Security Operation Adimnistration
Explanation
Explanation/Reference:
The Internet Security Glossary (RFC2828) defines aggregation as a circumstance in which a collection of information items is required to be classified at a higher security level than any of the individual items that comprise it.
Source: SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 409
Which of the following best defines add-on security?

A. Physical security complementing logical security measures.
B. Protection mechanisms implemented as an integral part of an information system.
C. Layer security.
D. Protection mechanisms implemented after an information system has become operational.

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Internet Security Glossary (RFC2828) defines add-on security as "The retrofitting of protection mechanisms, implemented by hardware or software, after the [automatic data processing] system has become operational."
Source: SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 410
Which of the following is best defined as a mode of system termination that automatically leaves system processes and components in a secure state when a failure occurs or is detected in a system?

A. Fail proof
B. Fail soft
C. Fail safe
D. Fail Over

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
NOTE: This question is referring to a system which is Logical/Technical, so it is in the context of a system that you must choose the right answer. This is very important to read the question carefully and to identify the context whether it is in the Physical world or in the Technical/Logical world.

RFC 2828 (Internet Security Glossary) defines fail safe as a mode of system termination that automatically leaves system processes and components in a secure state when a failure occurs or is detected in the system.

A secure state means in the Logical/Technical world that no access would be granted or no packets would be allowed to flow through the system inspecting the packets such as a firewall for example.

If the question would have made reference to a building or something specific to the Physical world then the answer would have been different. In the Physical World everything becomes open and full access would be granted. See the valid choices below for the Physical context.

Fail-safe in the physical security world is when doors are unlocked automatically in case of emergency. Used in environment where humans work around. As human safety is prime concern during Fire or other hazards.

The following were all wrong choices:

Fail-secure in the physical security world is when doors are locked automatically in case of emergency. Can be in an area like Cash Locker Room provided there should be alternative manually operated exit door in case of emergency.

Fail soft is selective termination of affected non-essential system functions and processes when a failure occurs or is detected in the system.

Fail Over is a redundancy mechanism and does not apply to this question.
There is a great post within the CCCure Forums on this specific Q:

saintrockz who is a long term contributor to the forums did outstanding research and you have the results below. The CCCure forum is a gold mine where thousands of Qs related to the CBK have been discussed.

According to the Official ISC2 Study Guide (OIG):
Fault Tolerance is defined as built-in capability of a system to provide continued correct execution in the presence of a limited number of hardware or software faults. It means a system can operate in the presence of hardware component failures. A single component failure in a fault-tolerant system will not cause a system interruption because the alternate component will take over the task transparently. As the cost of components continues to drop, and the demand for system availability increases, many non-fault-tolerant systems have redundancy built-in at the subsystem level. As a result, many non-fault-tolerant systems can tolerate hardware faults - consequently, the line between a fault-tolerant system and a non-fault-tolerant system becomes increasingly blurred.

According to Common Criteria:
Fail Secure - Failure with preservation of secure state, which requires that the TSF (TOE security functions) preserve a secure state in the face of the identified failures.

Acc. to The CISSP Prep Guide, Gold Ed.:
Fail over - When one system/application fails, operations will automatically switch to the backup system.
Fail safe - Pertaining to the automatic protection of programs and/or processing systems to maintain safety when a hardware or software failure is detected in a system.
Fail secure - The system preserves a secure state during and after identified failures occur.
Fail soft - Pertaining to the selective termination of affected non-essential processing when a hardware or software failure is detected in a system.

Acc. to CISSP for Dummies:
Fail closed - A control failure that results all accesses blocked.
Fail open - A control failure that results in all accesses permitted.
Failover - A failure mode where, if a hardware or software failure is detected, the system automatically transfers processing to a hot backup component, such as a clustered server.
Fail-safe - A failure mode where, if a hardware or software failure is detected, program execution is terminated, and the system is protected from compromise. Fail-soft (or resilient) - A failure mode where, if a hardware or software failure is detected, certain, noncritical processing is terminated, and the computer or network continues to function in a degraded mode.
Fault-tolerant - A system that continues to operate following failure of a computer or network component.

It's good to differentiate this concept in Physical Security as well:

Fail-safe
• Door defaults to being unlocked
• Dictated by fire codes

Fail-secure
• Door defaults to being locked

Reference(s) used for this question:

SHIREY, Robert W., RFC2828: Internet Security Glossary, may 2000.

QUESTION 411
The preliminary steps to security planning include all of the following EXCEPT which of the following?

A. Establish objectives.
B. List planning assumptions.
C. Establish a security audit function.
D. Determine alternate courses of action

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The keyword within the question is: preliminary

This means that you are starting your effort, you cannot audit if your infrastructure is not even in place.

Reference used for this question:

TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 412
Step-by-step instructions used to satisfy control requirements is called a:

A. policy
B. standard
C. guideline
D. procedure

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 413
One purpose of a security awareness program is to modify:

A. employee's attitudes and behaviors towards enterprise's security posture
B. management's approach towards enterprise's security posture
C. attitudes of employees with sensitive data
D. corporate attitudes about safeguarding data

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Answer: security awareness training is to modify employees behaviour and attitude towards towards enterprise's security posture.

Security-awareness training is performed to modify employees' behavior and attitude toward security. This can best be achieved through a formalized process of security-awareness training.

It is used to increase the overall awareness of security throughout the company. It is targeted to every single employee and not only to one group of users.

Unfortunately you cannot apply a patch to a human being, the only thing you can do is to educate employees and make them more aware of security issues and threats. Never underestimate human stupidity.

Reference(s) used for this question:

TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.
also see:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 130). McGraw-Hill. Kindle Edition.

QUESTION 414
Whose role is it to assign classification level to information?

A. Security Administrator
B. User
C. Owner
D. Auditor

Correct Answer: C

Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The Data/Information Owner is ultimately responsible for the protection of the data. It is the Data/Information Owner that decides upon the classifications of that data they are responsible for.

The data owner decides upon the classification of the data he is responsible for and alters that classification if the business need arises.

The following answers are incorrect:

Security Administrator. Is incorrect because this individual is responsible for ensuring that the access right granted are correct and support the polices and directives that the Data/Information Owner defines.

User. Is Incorrect because the user uses/access the data according to how the Data/Information Owner defined their access.

Auditor. Is incorrect because the Auditor is responsible for ensuring that the access levels are appropriate. The Auditor would verify that the Owner classified the data properly.

References:
CISSP All In One Third Edition, Shon Harris, Page 121

QUESTION 415
Which of the following security controls might force an operator into collusion with personnel assigned organizationally within a different function in order to gain access to unauthorized data?

A. Limiting the local access of operations personnel
B. Job rotation of operations personnel
C. Management monitoring of audit logs
D. Enforcing regular password changes

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The questions specifically said: "within a different function" which eliminate Job Rotation as a choice.

Management monitoring of audit logs is a detective control and it would not prevent collusion.
Changing passwords regularly would not prevent such attack.

This question validates if you understand the concept of separation of duties and least privilege. By having operators that have only the minimum access level they need and only what they need to do their duties within a company, the operations personnel would be force to use collusion to defeat those security mechanism. Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 416
What is the most secure way to dispose of information on a CD-ROM?

A. Sanitizing
B. Physical damage
C. Degaussing
D. Physical destruction

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
First you have to realize that the question is specifically talking about a CDROM. The information stored on a CDROM is not in electro magnetic format, so a degausser woud be inneffective.

You cannot sanitize a CDROM but you might be able to sanitize a RW/CDROM. A CDROM is a write once device and cannot be overwritten like a hard disk or other magnetic device.

Physical Damage would not be enough as information could still be extracted in a lab from the undamaged portion of the media or even from the pieces after the physical damage has been done.

Physical Destruction using a shredder, your microwave oven, melting it, would be very effective and the best choice for a non magnetic media such as a CDROM. Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 417
The Reference Validation Mechanism that ensures the authorized access relationships between subjects and objects is implementing which of the following concept:

A. The reference monitor.
B. Discretionary Access Control.
C. The Security Kernel.

D. Mandatory Access Control.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
The reference monitor concept is an abstract machine that ensures that all subjects have the necessary access rights before accessing objects. Therefore, the kernel will mediates all accesses to objects by subjects and will do so by validating through the reference monitor concept.

The kernel does not decide whether or not the access will be granted, it will be the Reference Monitor which is a subset of the kernel that will say YES or NO.

All access requests will be intercepted by the Kernel, validated through the reference monitor, and then access will either be denied or granted according to the request and the subject privileges within the system.

1. The reference monitor must be small enough to be full tested and valided
2. The Kernel must MEDIATE all access request from subjects to objects
3. The processes implementing the reference monitor must be protected
4. The reference monitor must be tamperproof

The following answers are incorrect:

The security kernel is the mechanism that actually enforces the rules of the reference monitor concept.

The other answers are distractors.

Shon Harris, All In One, 5th Edition, Security Architecture and Design, Page 330

also see
http://en.wikipedia.org/wiki/Reference_monitor

QUESTION 418
Which of the following describes a logical form of separation used by secure computing systems?

A. Processes use different levels of security for input and output devices.
B. Processes are constrained so that each cannot access objects outside its permitted domain.
C. Processes conceal data and computations to inhibit access by outside processes.
D. Processes are granted access based on granularity of controlled objects.

Correct Answer: B
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 419
What security problem is most likely to exist if an operating system permits objects to be used sequentially by multiple users without forcing a refresh of the objects?

A. Disclosure of residual data.
B. Unauthorized obtaining of a privileged execution state.
C. Denial of service through a deadly embrace.
D. Data leakage through covert channels.

Correct Answer: A
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
This question is asking you to consider the effects of object reuse. Object reuse is "reassigning to subject media that previously contained information. Object reuse is a security concern because if insufficient measures were taken to erase the information on the media, the information may be disclosed to unauthorized personnel."

This concept relates to Security Architecture and Design, because it is in level C2: Controlled Access Protection, of the Orange Book, where "The object reuse concept must be invoked, meaning that any medium holding data must not contain any remnants of information after it is release for another subject to use."

REFERENCE:

AIO Version 5 (Shon Harris), page 360
and
TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 420
At what stage of the applications development process should the security department become involved?

A. Prior to the implementation
B. Prior to systems testing

C. During unit testing
D. During requirements development

Correct Answer: D
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 421
In what way could Java applets pose a security threat?

A. Their transport can interrupt the secure distribution of World Wide Web pages over the Internet by removing SSL and S-HTTP
B. Java interpreters do not provide the ability to limit system access that an applet could have on a client system.
C. Executables from the Internet may attempt an intentional attack when they are downloaded on a client system.
D. Java does not check the bytecode at runtime or provide other safety mechanisms for program isolation from the client system.

Correct Answer: C
Section: Security Operation Adimnistration
Explanation

Explanation/Reference:
Source: TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 422
Which of the following is needed for System Accountability?

A. Audit mechanisms.
B. Documented design as laid out in the Common Criteria.
C. Authorization.
D. Formal verification of system design.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Is a means of being able to track user actions. Through the use of audit logs and other tools the user actions are recorded and can be used at a later date to verify what actions were performed.

Accountability is the ability to identify users and to be able to track user actions.

The following answers are incorrect:

Documented design as laid out in the Common Criteria. Is incorrect because the Common Criteria is an international standard to evaluate trust and would not be a factor in System Accountability.

Authorization. Is incorrect because Authorization is granting access to subjects, just because you have authorization does not hold the subject accountable for their actions.

Formal verification of system design. Is incorrect because all you have done is to verify the system design and have not taken any steps toward system accountability.

References:
OIG CBK Glossary (page 778)

QUESTION 423
A timely review of system access audit records would be an example of which of the basic security functions?

A. avoidance
B. deterrence
C. prevention
D. detection

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
By reviewing system logs you can detect events that have occured.

The following answers are incorrect:

avoidance. This is incorrect, avoidance is a distractor. By reviewing system logs you have not avoided anything. deterrence. This is incorrect because system logs are a history of past events. You cannot deter something that has already occurred. prevention. This is incorrect because system logs are a history of past events. You cannot prevent something that has already occurred.

QUESTION 424
Which of the following would assist the most in Host Based intrusion detection?

A. audit trails.
B. access control lists.
C. security clearances
D. host-based authentication

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
To assist in Intrusion Detection you would review audit logs for access violations.

The following answers are incorrect:

access control lists. This is incorrect because access control lists determine who has access to what but do not detect intrusions. security clearances. This is incorrect because security clearances determine who has access to what but do not detect intrusions. host-based authentication. This is incorrect because host-based authentication determine who have been authenticated to the system but do not dectect intrusions.

QUESTION 425
Who should measure the effectiveness of Information System security related controls in an organization?

A. The local security specialist
B. The business manager
C. The systems auditor
D. The central security manager

Correct Answer: C

Section: Analysis and Monitoring
Explanation

Explanation/Reference:
It is the systems auditor that should lead the effort to ensure that the security controls are in place and effective. The audit would verify that the controls comply with polices, procedures, laws, and regulations where applicable. The findings would provide these to senior management.

The following answers are incorrect:
the local security specialist. Is incorrect because an independent review should take place by a third party. The security specialist might offer mitigation strategies but it is the auditor that would ensure the effectiveness of the controls

the business manager. Is incorrect because the business manager would be responsible that the controls are in place, but it is the auditor that would ensure the effectiveness of the controls.

the central security manager. Is incorrect because the central security manager would be responsible for implementing the controls, but it is the auditor that is responsibe for ensuring their effectiveness.

QUESTION 426
In an online transaction processing system (OLTP), which of the following actions should be taken when erroneous or invalid transactions are detected?

A. The transactions should be dropped from processing.
B. The transactions should be processed after the program makes adjustments.
C. The transactions should be written to a report and reviewed.
D. The transactions should be corrected and reprocessed.

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
In an online transaction processing system (OLTP) all transactions are recorded as they occur. When erroneous or invalid transactions are detected the transaction can be recovered by reviewing the logs.

As explained in the ISC2 OIG:
OLTP is designed to record all of the business transactions of an organization as they occur. It is a data processing system facilitating and managing transactionoriented applications. These are characterized as a system used by many concurrent users who are actively adding and modifying data to effectively change realtime data.

OLTP environments are frequently found in the finance, telecommunications, insurance, retail, transportation, and travel industries. For example, airline ticket agents enter data in the database in real-time by creating and modifying travel reservations, and these are increasingly joined by users directly making their own reservations and purchasing tickets through airline company Web sites as well as discount travel Web site portals. Therefore, millions of people may be accessing the same flight database every day, and dozens of people may be looking at a specific flight at the same time.

The security concerns for OLTP systems are concurrency and atomicity.

Concurrency controls ensure that two users cannot simultaneously change the same data, or that one user cannot make changes before another user is finished with it. In an airline ticket system, it is critical for an agent processing a reservation to complete the transaction, especially if it is the last seat available on the plane.

Atomicity ensures that all of the steps involved in the transaction complete successfully. If one step should fail, then the other steps should not be able to complete. Again, in an airline ticketing system, if the agent does not enter a name into the name data field correctly, the transaction should not be able to complete.

OLTP systems should act as a monitoring system and detect when individual processes abort, automatically restart an aborted process, back out of a transaction if necessary, allow distribution of multiple copies of application servers across machines, and perform dynamic load balancing.

A security feature uses transaction logs to record information on a transaction before it is processed, and then mark it as processed after it is done. If the system fails during the transaction, the transaction can be recovered by reviewing the transaction logs.

Checkpoint restart is the process of using the transaction logs to restart the machine by running through the log to the last checkpoint or good transaction. All transactions following the last checkpoint are applied before allowing users to access the data again.

Wikipedia has nice coverage on what is OLTP:
Online transaction processing, or OLTP, refers to a class of systems that facilitate and manage transaction-oriented applications, typically for data entry and retrieval transaction processing. The term is somewhat ambiguous; some understand a "transaction" in the context of computer or database transactions, while others (such as the Transaction Processing Performance Council) define it in terms of business or commercial transactions.

OLTP has also been used to refer to processing in which the system responds immediately to user requests. An automatic teller machine (ATM) for a bank is an example of a commercial transaction processing application.

The technology is used in a number of industries, including banking, airlines, mailorder, supermarkets, and manufacturing. Applications include electronic banking, order processing, employee time clock systems, e-commerce, and eTrading.

There are two security concerns for OLTP system: Concurrency and Atomicity

ATOMICITY
In database systems, atomicity (or atomicness) is one of the ACID transaction properties. In an atomic transaction, a series of database operations either all occur, or nothing occurs. A guarantee of atomicity prevents updates to the database occurring only partially, which can cause greater problems than rejecting the whole series outright.

The etymology of the phrase originates in the Classical Greek concept of a fundamental and indivisible component; see atom.

An example of atomicity is ordering an airline ticket where two actions are required: payment, and a seat reservation. The potential passenger must either:

both pay for and reserve a seat; OR
neither pay for nor reserve a seat.

The booking system does not consider it acceptable for a customer to pay for a ticket without securing the seat, nor to reserve the seat without payment succeeding.

CONCURRENCY
Database concurrency controls ensure that transactions occur in an ordered fashion.

The main job of these controls is to protect transactions issued by different users/applications from the effects of each other. They must preserve the four characteristics of database transactions ACID test: Atomicity, Consistency, Isolation, and Durability. Read http://en.wikipedia.org/wiki/ACID for more details on the ACID test.

Thus concurrency control is an essential element for correctness in any system where two database transactions or more, executed with time overlap, can access the same data, e.g., virtually in any general-purpose database system. A well established concurrency control theory exists for database systems: serializability theory, which allows to effectively design and analyze concurrency control methods and mechanisms.

Concurrency is not an issue in itself, it is the lack of proper concurrency controls that makes it a serious issue.

The following answers are incorrect:

The transactions should be dropped from processing. Is incorrect because the transactions are processed and when erroneous or invalid transactions are detected the transaction can be recovered by reviewing the logs.

The transactions should be processed after the program makes adjustments. Is incorrect because the transactions are processed and when erroneous or invalid transactions are detected the transaction can be recovered by reviewing the logs.

The transactions should be corrected and reprocessed. Is incorrect because the transactions are processed and when erroneous or invalid transactions are detected the transaction can be recovered by reviewing the logs.

References:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 12749-12768). Auerbach Publications. Kindle Edition. and
http://en.wikipedia.org/wiki/Online_transaction_processing
and

http://databases.about.com/od/administration/g/concurrency.htm

QUESTION 427
Who can best decide what are the adequate technical security controls in a computer-based application system in regards to the protection of the data being used, the criticality of the data, and it's sensitivity level ?

A. System Auditor
B. Data or Information Owner
C. System Manager
D. Data or Information user

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
The data or information owner also referred to as "Data Owner" would be the best person. That is the individual or officer who is ultimately responsible for the protection of the information and can therefore decide what are the adequate security controls according to the data sensitivity and data criticality. The auditor would be the best person to determine the adequacy of controls and whether or not they are working as expected by the owner.

The function of the auditor is to come around periodically and make sure you are doing what you are supposed to be doing. They ensure the correct controls are in place and are being maintained securely. The goal of the auditor is to make sure the organization complies with its own policies and the applicable laws and regulations.

Organizations can have internal auditors and/ or external auditors. The external auditors commonly work on behalf of a regulatory body to make sure compliance is being met. For example CobiT, which is a model that most information security auditors follow when evaluating a security program. While many security professionals fear and dread auditors, they can be valuable tools in ensuring the overall security of the organization. Their goal is to find the things you have missed and help you understand how to fix the problem.

The Official ISC2 Guide (OIG) says:
IT auditors determine whether users, owners, custodians, systems, and networks are in compliance with the security policies, procedures, standards, baselines, designs, architectures, management direction, and other requirements placed on systems. The auditors provide independent assurance to the management on the appropriateness of the security controls. The auditor examines the information systems and determines whether they are designed, configured, implemented, operated, and managed in a way ensuring that the organizational objectives are being achieved. The auditors provide top company management with an independent view of the controls and their effectiveness.

Example:

Bob is the head of payroll. He is therefore the individual with primary responsibility over the payroll database, and is therefore the information/data owner of the payroll database. In Bob's department, he has Sally and Richard working for him. Sally is responsible for making changes to the payroll database, for example if someone is hired or gets a raise. Richard is only responsible for printing paychecks. Given those roles, Sally requires both read and write access to the payroll database, but Richard requires only read access to it. Bob communicates these requirements to the system administrators (the "information/data custodians") and they set the file permissions for Sally's and Richard's user accounts so that Sally has read/write access, while Richard has only read access.

So in short Bob will determine what controls are required, what is the sensitivily and criticality of the Data. Bob will communicate this to the custodians who will implement the requirements on the systems/DB. The auditor would assess if the controls are in fact providing the level of security the Data Owner expects within the systems/DB. The auditor does not determine the sensitivity of the data or the crititicality of the data.

The other answers are not correct because:
A "system auditor" is never responsible for anything but auditing... not actually making control decisions but the auditor would be the best person to determine the adequacy of controls and then make recommendations.

A "system manager" is really just another name for a system administrator, which is actually an information custodian as explained above.

A "Data or information user" is responsible for implementing security controls on a day-to-day basis as they utilize the information, but not for determining what the controls should be or if they are adequate.

References:
Official ISC2 Guide to the CISSP CBK, Third Edition , Page 477

Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Information Security Governance and Risk Management ((ISC)2 Press) (Kindle Locations 294-298). Auerbach Publications. Kindle Edition.

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 3108-3114).

Information Security Glossary
Responsibility for use of information resources

QUESTION 428
Attributable data should be:

A. always traced to individuals responsible for observing and recording the data
B. sometimes traced to individuals responsible for observing and recording the data
C. never traced to individuals responsible for observing and recording the data
D. often traced to individuals responsible for observing and recording the data

Correct Answer: A

Section: Analysis and Monitoring
Explanation

Explanation/Reference:
As per FDA data should be attributable, original, accurate, contemporaneous and legible. In an automated system attributability could be achieved by a computer system designed to identify individuals responsible for any input.
Source: U.S. Department of Health and Human Services, Food and Drug Administration, Guidance for Industry - Computerized Systems Used in Clinical Trials, April 1999, page 1.

QUESTION 429
Which of the following best describes signature-based detection?

A. Compare source code, looking for events or sets of events that could cause damage to a system or network.
B. Compare system activity for the behaviour patterns of new attacks.
C. Compare system activity, looking for events or sets of events that match a predefined pattern of events that describe a known attack.
D. Compare network nodes looking for objects or sets of objects that match a predefined pattern of objects that may describe a known attack.

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Misuse detectors compare system activity, looking for events or sets of events that match a predefined pattern of events that describe a known attack. As the patterns corresponding to known attacks are called signatures, misuse detection is sometimes called "signature-based detection."

The most common form of misuse detection used in commercial products specifies each pattern of events corresponding to an attack as a separate signature. However, there are more sophisticated approaches to doing misuse detection (called "state-based" analysis techniques) that can leverage a single signature to detect groups of attacks.

Reference:

Old Document:
BACE, Rebecca & MELL, Peter, NIST Special Publication 800-31 on Intrusion Detection Systems, Page 16.

The publication above has been replaced by 800-94 on page 2-4
The Updated URL is: http://csrc.nist.gov/publications/nistpubs/800-94/SP800-94.pdf

QUESTION 430

Which of the following is used to monitor network traffic or to monitor host audit logs in real time to determine violations of system security policy that have taken place?

A. Intrusion Detection System
B. Compliance Validation System
C. Intrusion Management System (IMS)
D. Compliance Monitoring System

Correct Answer: A
Section: Analysis and Monitoring
Explanation
Explanation/Reference:
An Intrusion Detection System (IDS) is a system that is used to monitor network traffic or to monitor host audit logs in order to determine if any violations of an organization's system security policy have taken place.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 48.

QUESTION 431
Which of the following monitors network traffic in real time?

A. network-based IDS
B. host-based IDS
C. application-based IDS
D. firewall-based IDS

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
This type of IDS is called a network-based IDS because monitors network traffic in real time.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 48.

QUESTION 432
A host-based IDS is resident on which of the following?

A. On each of the critical hosts
B. decentralized hosts

C. central hosts
D. bastion hosts

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
A host-based IDS is resident on a host and reviews the system and event logs in order to detect an attack on the host and to determine if the attack was successful. All critical serves should have a Host Based Intrusion Detection System (HIDS) installed. As you are well aware, network based IDS cannot make sense or detect pattern of attacks within encrypted traffic. A HIDS might be able to detect such attack after the traffic has been decrypted on the host. This is why critical servers should have both NIDS and HIDS.

FROM WIKIPEDIA:

A HIDS will monitor all or part of the dynamic behavior and of the state of a computer system. Much as a NIDS will dynamically inspect network packets, a HIDS might detect which program accesses what resources and assure that (say) a word-processor hasn\'t suddenly and inexplicably started modifying the system password-database. Similarly a HIDS might look at the state of a system, its stored information, whether in RAM, in the file-system, or elsewhere; and check that the contents of these appear as expected.

One can think of a HIDS as an agent that monitors whether anything/anyone - internal or external - has circumvented the security policy that the operating system tries to enforce. http://en.wikipedia.org/wiki/Host-based_intrusion_detection_system

QUESTION 433
Which of the following usually provides reliable, real-time information without consuming network or host resources?

A. network-based IDS
B. host-based IDS
C. application-based IDS
D. firewall-based IDS

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
A network-based IDS usually provides reliable, real-time information without consuming network or host resources.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 48.

QUESTION 434
The fact that a network-based IDS reviews packets payload and headers enable which of the following?

A. Detection of denial of service
B. Detection of all viruses
C. Detection of data corruption
D. Detection of all password guessing attacks

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Because a network-based IDS reviews packets and headers, denial of service attacks can also be detected.

This question is an easy question if you go through the process of elimination. When you see an answer containing the keyword: ALL It is something a give away that it is not the proper answer. On the real exam you may encounter a few question where the use of the work ALL renders the choice invalid. Pay close attention to such keyword.

The following are incorrect answers:

Even though most IDSs can detect some viruses and some password guessing attacks, they cannot detect ALL viruses or ALL password guessing attacks. Therefore these two answers are only detractors.
Unless the IDS knows the valid values for a certain dataset, it can NOT detect data corruption.

Reference used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 48.

QUESTION 435
Which of the following reviews system and event logs to detect attacks on the host and determine if the attack was successful?

A. host-based IDS
B. firewall-based IDS
C. bastion-based IDS
D. server-based IDS

Correct Answer: A

Section: Analysis and Monitoring
Explanation

Explanation/Reference:
A host-based IDS can review the system and event logs in order to detect an attack on the host and to determine if the attack was successful.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 48.

QUESTION 436
What would be considered the biggest drawback of Host-based Intrusion Detection systems (HIDS)?

A. It can be very invasive to the host operating system
B. Monitors all processes and activities on the host system only
C. Virtually eliminates limits associated with encryption
D. They have an increased level of visibility and control compared to NIDS

Correct Answer: A
Section: Analysis and Monitoring
Explanation
Explanation/Reference:
The biggest drawback of HIDS, and the reason many organizations resist its use, is that it can be very invasive to the host operating system. HIDS must have the capability to monitor all processes and activities on the host system and this can sometimes interfere with normal system processing.

HIDS versus NIDS
A host-based IDS (HIDS) can be installed on individual workstations and/ or servers to watch for inappropriate or anomalous activity. HIDSs are usually used to make sure users do not delete system files, reconfigure important settings, or put the system at risk in any other way.

So, whereas the NIDS understands and monitors the network traffic, a HIDS's universe is limited to the computer itself. A HIDS does not understand or review network traffic, and a NIDS does not "look in" and monitor a system's activity. Each has its own job and stays out of the other's way.

The ISC2 official study book defines an IDS as:
An intrusion detection system (IDS) is a technology that alerts organizations to adverse or unwanted activity. An IDS can be implemented as part of a network device, such as a router, switch, or firewall, or it can be a dedicated IDS device monitoring traffic as it traverses the network. When used in this way, it is referred to as a network IDS, or NIDS. IDS can also be used on individual host systems to monitor and report on file, disk, and process activity on that host. When used in this way it is referred to as a host-based IDS, or HIDS.

An IDS is informative by nature and provides real-time information when suspicious activities are identified. It is primarily a detective device and, acting in this traditional role, is not used to directly prevent the suspected attack.

What about IPS?

In contrast, an intrusion prevention system (IPS), is a technology that monitors activity like an IDS but will automatically take proactive preventative action if it detects unacceptable activity. An IPS permits a predetermined set of functions and actions to occur on a network or system; anything that is not permitted is considered unwanted activity and blocked. IPS is engineered specifically to respond in real time to an event at the system or network layer. By proactively enforcing policy, IPS can thwart not only attackers, but also authorized users attempting to perform an action that is not within policy. Fundamentally, IPS is considered an access control and policy enforcement technology, whereas IDS is considered network monitoring and audit technology.

The following answers were incorrect:
All of the other answer were advantages and not drawback of using HIDS

TIP FOR THE EXAM:
Be familiar with the differences that exists between an HIDS, NIDS, and IPS. Know that IDS's are mostly detective but IPS are preventive. IPS's are considered an access control and policy enforcement technology, whereas IDS's are considered network monitoring and audit technology.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 5817-5822). McGraw-Hill. Kindle Edition.
and
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Access Control ((ISC)2 Press), Domain1, Page 180-188 or on the kindle version look for Kindle Locations 3199-3203. Auerbach Publications.

QUESTION 437
Attributes that characterize an attack are stored for reference using which of the following Intrusion Detection System (IDS) ?

A. signature-based IDS
B. statistical anomaly-based IDS
C. event-based IDS
D. inferent-based IDS

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 438
Which of the following is an issue with signature-based intrusion detection systems?

A. Only previously identified attack signatures are detected.

B. Signature databases must be augmented with inferential elements.
C. It runs only on the windows operating system
D. Hackers can circumvent signature evaluations.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
An issue with signature-based ID is that only attack signatures that are stored in their database are detected.

New attacks without a signature would not be reported. They do require constant updates in order to maintain their effectiveness.

Reference used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 439
Which of the following is an IDS that acquires data and defines a "normal" usage profile for the network or host?

A. Statistical Anomaly-Based ID

B. Signature-Based ID
C. dynamical anomaly-based ID
D. inferential anomaly-based ID

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Statistical Anomaly-Based ID - With this method, an IDS acquires data and defines a "normal" usage profile for the network or host that is being monitored.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 440
Which of the following is a disadvantage of a statistical anomaly-based intrusion detection system?

A. it may truly detect a non-attack event that had caused a momentary anomaly in the system.
B. it may falsely detect a non-attack event that had caused a momentary anomaly in the system.

C. it may correctly detect a non-attack event that had caused a momentary anomaly in the system.
D. it may loosely detect a non-attack event that had caused a momentary anomaly in the system.

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Some disadvantages of a statistical anomaly-based ID are that it will not detect an attack that does not significantly change the system operating characteristics, or it may falsely detect a non-attack event that had caused a momentary anomaly in the system.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 49.

QUESTION 441
In the process of gathering evidence from a computer attack, a system administrator took a series of actions which are listed below. Can you identify which one of these actions has compromised the whole evidence collection process?

A. Using a write blocker
B. Made a full-disk image
C. Created a message digest for log files
D. Displayed the contents of a folder

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Displaying the directory contents of a folder can alter the last access time on each listed file.

Using a write blocker is wrong because using a write blocker ensure that you cannot modify the data on the host and it prevent the host from writing to its hard drives.

Made a full-disk image is wrong because making a full-disk image can preserve all data on a hard disk, including deleted files and file fragments.

Created a message digest for log files is wrong because creating a message digest for log files. A message digest is a cryptographic checksum that can demonstrate that the integrity of a file has not been compromised (e.g. changes to the content of a log file)

Domain: LEGAL, REGULATIONS, COMPLIANCE AND INVESTIGATIONS

References:
AIO 3rd Edition, page 783-784
NIST 800-61 Computer Security Incident Handling guide page 3-18 to 3-20

QUESTION 442
As a result of a risk assessment, your security manager has determined that your organization needs to implement an intrusion detection system that can detect unknown attacks and can watch for unusual traffic behavior, such as a new service appearing on the network. What type of intrusion detection system would you select?

A. Protocol anomaly based
B. Pattern matching
C. Stateful matching
D. Traffic anomaly-based

Correct Answer: D
Section: Analysis and Monitoring
Explanation
Explanation/Reference:
Traffic anomaly-based is the correct choice. An anomaly based IDS can detect unknown attacks. A traffic anomaly based IDS identifies any unacceptable deviation from expected behavior based on network traffic.

Protocol anomaly based is not the best choice as while a protocol anomaly based IDS can identify unknown attacks, this type of system is more suited to identifying deviations from established protocol standards such as HTTP. This type of IDS faces problems in analyzing complex or custom protocols.

Pattern matching is not the best choice as a pattern matching IDS cannot identify unknown attacks. This type of system can only compare packets against signatures of known attacks.

Stateful matching is not the best choice as a statful matching IDS cannot identify unknown attacks. This type of system works by scanning traffic streams for patterns or signatures of attacks.

Reference:
Official guide to the CISSP CBK. pages 198 to 201

QUESTION 443
Which of the following is NOT a characteristic of a host-based intrusion detection system?

A. A HIDS does not consume large amounts of system resources
B. A HIDS can analyse system logs, processes and resources
C. A HIDS looks for unauthorized changes to the system
D. A HIDS can notify system administrators when unusual events are identified

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
A HIDS does not consume large amounts of system resources is the correct choice. HIDS can consume inordinate amounts of CPU and system resources in order to function effectively, especially during an event. All the other answers are characteristics of HIDSes

A HIDS can:

scrutinize event logs, critical system files, and other auditable system resources;
look for unauthorized change or suspicious patterns of behavior or activity
can send alerts when unusual events are discovered

Reference:
Official guide to the CISSP CBK. Pages 197 to 198.

QUESTION 444
Which of the following is NOT a fundamental component of an alarm in an intrusion detection system?

A. Communications
B. Enunciator
C. Sensor
D. Response

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Response is the correct choice. A response would essentially be the action that is taken once an alarm has been produced by an IDS, but is not a fundamental component of the alarm.

The following are incorrect answers:

Communications is the component of an alarm that delivers alerts through a variety of channels such as email, pagers, instant messages and so on.
An Enunciator is the component of an alarm that uses business logic to compose the content and format of an alert and determine the recipients of that alert. A sensor is a fundamental component of IDS alarms. A sensor detects an event and produces an appropriate notification. Domain: Access Control

Reference:
Official guide to the CISSP CBK. page 203.

QUESTION 445
Which one of the following statements about the advantages and disadvantages of network-based Intrusion detection systems is true

A. Network-based IDSs are not vulnerable to attacks.
B. Network-based IDSs are well suited for modern switch-based networks.
C. Most network-based IDSs can automatically indicate whether or not an attack was successful.
D. The deployment of network-based IDSs has little impact upon an existing network.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Network-based IDSs are usually passive devices that listen on a network wire without interfering with the normal operation of a network. Thus, it is usually easy to retrofit a network to include network-based IDSs with minimal effort.

Network-based IDSs are not vulnerable to attacks is not true, even thou network-based IDSs can be made very secure against attack and even made invisible to many attackers they still have to read the packets and sometimes a well crafted packet might exploit or kill your capture engine.

Network-based IDSs are well suited for modern switch-based networks is not true as most switches do not provide universal monitoring ports and this limits the monitoring range of a network-based IDS sensor to a single host. Even when switches provide such monitoring ports, often the single port cannot mirror all traffic traversing the switch.

Most network-based IDSs can automatically indicate whether or not an attack was successful is not true as most network-based IDSs cannot tell whether or not an attack was successful; they can only discern that an attack was initiated. This means that after a network-based IDS detects an attack, administrators must manually investigate each attacked host to determine whether it was indeed penetrated.

Reference:
NIST special publication 800-31 Intrusion Detection System pages 15-16
Official guide to the CISSP CBK. Pages 196 to 197

QUESTION 446
Which protocol is NOT implemented in the Network layer of the OSI Protocol Stack?

A. hyper text transport protocol
B. Open Shortest Path First
C. Internet Protocol
D. Routing Information Protocol

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Open Shortest Path First, Internet Protocol, and Routing Information Protocol are all protocols implemented in the Network Layer.

Domain: Telecommunications and Network Security

References: AIO 3rd edition. Page 429
Official Guide to the CISSP CBK. Page 411

QUESTION 447
The session layer provides a logical persistent connection between peer hosts. Which of the following is one of the modes used in the session layer to establish this connection?

A. Full duplex
B. Synchronous
C. Asynchronous
D. Half simplex

Correct Answer: A

Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Layer 5 of the OSI model is the Session Layer. This layer provides a logical persistent connection between peer hosts. A session is analogous to a conversation that is necessary for applications to exchange information.

The session layer is responsible for establishing, managing, and closing end-to-end connections, called sessions, between applications located at different network endpoints. Dialogue control management provided by the session layer includes full-duplex, half-duplex, and simplex communications. Session layer management also helps to ensure that multiple streams of data stay synchronized with each other, as in the case of multimedia applications like video conferencing, and assists with the prevention of application related data errors.

The session layer is responsible for creating, maintaining, and tearing down the session.

Three modes are offered:

(Full) Duplex: Both hosts can exchange information simultaneously, independent of each other.
Half Duplex: Hosts can exchange information, but only one host at a time.
Simplex: Only one host can send information to its peer. Information travels in one direction only.

Another aspect of performance that is worthy of some attention is the mode of operation of the network or connection. Obviously, whenever we connect together device A and device B, there must be some way for A to send to B and B to send to A. Many people don't realize, however, that networking technologies can differ in terms of how these two directions of communication are handled. Depending on how the network is set up, and the characteristics of the technologies used, performance may be improved through the selection of performance-enhancing modes. Basic Communication Modes of Operation

Let's begin with a look at the three basic modes of operation that can exist for any network connection, communications channel, or interface.
Simplex Operation

In simplex operation, a network cable or communications channel can only send information in one direction; it's a "one-way street". This may seem counterintuitive: what's the point of communications that only travel in one direction? In fact, there are at least two different places where simplex operation is encountered in modern networking.

The first is when two distinct channels are used for communication: one transmits from A to B and the other from B to A. This is surprisingly common, even though not always obvious. For example, most if not all fiber optic communication is simplex, using one strand to send data in each direction. But this may not be obvious if the pair of fiber strands are combined into one cable.

Simplex operation is also used in special types of technologies, especially ones that are asymmetric. For example, one type of satellite Internet access sends data over the satellite only for downloads, while a regular dial-up modem is used for upload to the service provider. In this case, both the satellite link and the dial-up connection are operating in a simplex mode.
Half-Duplex Operation

Technologies that employ half-duplex operation are capable of sending information in both directions between two nodes, but only one direction or the other can be utilized at a time. This is a fairly common mode of operation when there is only a single network medium (cable, radio frequency and so forth) between devices.

While this term is often used to describe the behavior of a pair of devices, it can more generally refer to any number of connected devices that take turns transmitting. For example, in conventional Ethernet networks, any device can transmit, but only one may do so at a time. For this reason, regular (unswitched) Ethernet networks are often said to be “half-duplex”, even though it may seem strange to describe a LAN that way.
Full-Duplex Operation

In full-duplex operation, a connection between two devices is capable of sending data in both directions simultaneously. Full-duplex channels can be constructed either as a pair of simplex links (as described above) or using one channel designed to permit bidirectional simultaneous transmissions. A full-duplex link can only connect two devices, so many such links are required if multiple devices are to be connected together.

Note that the term “full-duplex” is somewhat redundant; “duplex” would suffice, but everyone still says “full-duplex” (likely, to differentiate this mode from halfduplex).

For a listing of protocols associated with Layer 5 of the OSI model, see below:

ADSP - AppleTalk Data Stream Protocol
ASP - AppleTalk Session Protocol
H.245 - Call Control Protocol for Multimedia Communication
ISO-SP
OSI session-layer protocol (X.225, ISO 8327)
iSNS - Internet Storage Name Service

The following are incorrect answers:

Synchronous and Asynchronous are not session layer modes.

Half simplex does not exist. By definition, simplex means that information travels one way only, so half-simplex is a oxymoron.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 5603-5636). Auerbach Publications. Kindle Edition. and http://www.tcpipguide.com/free/t_SimplexFullDuplexandHalfDuplexOperation.htm and http://www.wisegeek.com/what-is-a-session-layer.htm

QUESTION 448
Which of the following tools is NOT likely to be used by a hacker?

A. Nessus

B. Saint
C. Tripwire
D. Nmap

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
It is a data integrity assurance software aimed at detecting and reporting accidental or malicious changes to data.

The following answers are incorrect :

Nessus is incorrect as it is a vulnerability scanner used by hackers in discovering vulnerabilities in a system.
Saint is also incorrect as it is also a network vulnerability scanner likely to be used by hackers.
Nmap is also incorrect as it is a port scanner for network exploration and likely to be used by hackers.

Reference :
Tripwire : http://www.tripwire.com
Nessus : http://www.nessus.org
Saint : http://www.saintcorporation.com/saint
Nmap : http://insecure.org/nmap

QUESTION 449
Which of the following would be LESS likely to prevent an employee from reporting an incident?

A. They are afraid of being pulled into something they don't want to be involved with.
B. The process of reporting incidents is centralized.
C. They are afraid of being accused of something they didn't do.
D. They are unaware of the company's security policies and procedures.

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
The reporting process should be centralized else employees won't bother.

The other answers are incorrect because :
They are afraid of being pulled into something they don't want to be involved with is incorrect as most of the employees fear of this and this would prevent them to report an incident.

They are afraid of being accused of something they didn't do is also incorrect as this also prevents them to report an incident.

They are unaware of the company's security policies and procedures is also incorrect as mentioned above.

Reference : Shon Harris AIO v3 , Ch-10 : Laws , Investigatio & Ethics , Page : 675.

QUESTION 450
Which of the following would NOT violate the Due Diligence concept?

A. Security policy being outdated
B. Data owners not laying out the foundation of data protection
C. Network administrator not taking mandatory two-week vacation as planned
D. Latest security patches for servers being installed as per the Patch Management process

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
To be effective a patch management program must be in place (due diligence) and detailed procedures would specify how and when the patches are applied properly (Due Care). Remember, the question asked for NOT a violation of Due Diligence, in this case, applying patches demonstrates due care and the patch management process in place demonstrates due diligence.

Due diligence is the act of investigating and understanding the risks the company faces. A company practices by developing and implementing security policies, procedures, and standards. Detecting risks would be based on standards such as ISO 2700, Best Practices, and other published standards such as NIST standards for example.

Due Diligence is understanding the current threats and risks. Due diligence is practiced by activities that make sure that the protection mechanisms are continually maintained and operational where risks are constantly being evaluated and reviewed. The security policy being outdated would be an example of violating the due diligence concept.

Due Care is implementing countermeasures to provide protection from those threats. Due care is when the necessary steps to help protect the company and its resources from possible risks that have been identifed. If the information owner does not lay out the foundation of data protection (doing something about it) and ensure that the directives are being enforced (actually being done and kept at an acceptable level), this would violate the due care concept.

If a company does not practice due care and due diligence pertaining to the security of its assets, it can be legally charged with negligence and held accountable for any ramifications of that negligence. Liability is usually established based on Due Diligence and Due Care or the lack of either.

A good way to remember this is using the first letter of both words within Due Diligence (DD) and Due Care (DC).

Due Diligence = Due Detect
Steps you take to identify risks based on best practices and standards.

Due Care = Due Correct.
Action you take to bring the risk level down to an acceptable level and maintaining that level over time.

The Following answer were wrong:

Security policy being outdated:
While having and enforcing a security policy is the right thing to do (due care), if it is outdated, you are not doing it the right way (due diligence). This questions violates due diligence and not due care.

Data owners not laying out the foundation for data protection:
Data owners are not recognizing the "right thing" to do. They don't have a security policy.

Network administrator not taking mandatory two week vacation:
The two week vacation is the "right thing" to do, but not taking the vacation violates due diligence (not doing the right thing the right way)

Reference(s) used for this question
Shon Harris, CISSP All In One, Version 5, Chapter 3, pg 110

QUESTION 451
What is the primary goal of setting up a honeypot?

A. To lure hackers into attacking unused systems
B. To entrap and track down possible hackers
C. To set up a sacrificial lamb on the network
D. To know when certain types of attacks are in progress and to learn about attack techniques so the network can be fortified.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:

The primary purpose of a honeypot is to study the attack methods of an attacker for the purposes of understanding their methods and improving defenses.

"To lure hackers into attacking unused systems" is incorrect. Honeypots can serve as decoys but their primary purpose is to study the behaviors of attackers.

"To entrap and track down possible hackers" is incorrect. There are a host of legal issues around enticement vs entrapment but a good general rule is that entrapment is generally prohibited and evidence gathered in a scenario that could be considered as "entrapping" an attacker would not be admissible in a court of law.

"To set up a sacrificial lamb on the network" is incorrect. While a honeypot is a sort of sacrificial lamb and may attract attacks that might have been directed against production systems, its real purpose is to study the methods of attackers with the goals of better understanding and improving network defenses.

References
AIO3, p. 213

QUESTION 452
Who is responsible for providing reports to the senior management on the effectiveness of the security controls?

A. Information systems security professionals
B. Data owners
C. Data custodians
D. Information systems auditors

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
IT auditors determine whether systems are in compliance with the security policies, procedures, standards, baselines, designs, architectures, management direction and other requirements" and "provide top company management with an independent view of the controls that have been designed and their effectiveness."

"Information systems security professionals" is incorrect. Security professionals develop the security policies and supporting baselines, etc.

"Data owners" is incorrect. Data owners have overall responsibility for information assets and assign the appropriate classification for the asset as well as ensure that the asset is protected with the proper controls.

"Data custodians" is incorrect. Data custodians care for an information asset on behalf of the data owner.

References:

CBK, pp. 38 - 42.
AIO3. pp. 99 - 104

QUESTION 453
Which of the following are the two MOST common implementations of Intrusion Detection Systems?

A. Server-based and Host-based.
B. Network-based and Guest-based.
C. Network-based and Client-based.
D. Network-based and Host-based.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
The two most common implementations of Intrusion Detection are Network-based and Host-based.

IDS can be implemented as a network device, such as a router, switch, firewall, or dedicated device monitoring traffic, typically referred to as network IDS (NIDS).

The" (IDS) "technology can also be incorporated into a host system (HIDS) to monitor a single system for undesirable activities. "

A network intrusion detection system (NIDS) is a network device .... that monitors traffic traversing the network segment for which it is integrated." Remember that NIDS are usually passive in nature.

HIDS is the implementation of IDS capabilities at the host level. Its most significant difference from NIDS is that related processes are limited to the boundaries of a single-host system. However, this presents advantages in effectively detecting objectionable activities because the IDS process is running directly on the host system, not just observing it from the network.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 3649-3652). Auerbach Publications. Kindle Edition.

QUESTION 454
Network-based Intrusion Detection systems:

A. Commonly reside on a discrete network segment and monitor the traffic on that network segment.

B. Commonly will not reside on a discrete network segment and monitor the traffic on that network segment.

C. Commonly reside on a discrete network segment and does not monitor the traffic on that network segment.
D. Commonly reside on a host and and monitor the traffic on that specific host.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Network-based ID systems:
- Commonly reside on a discrete network segment and monitor the traffic on that network segment
- Usually consist of a network appliance with a Network Interface Card (NIC) that is operating in promiscuous mode and is intercepting and analyzing the network packets in real time

"A passive NIDS takes advantage of promiscuous mode access to the network, allowing it to gain visibility into every packet traversing the network segment. This allows the system to inspect packets and monitor sessions without impacting the network, performance, or the systems and applications utilizing the network."

NOTE FROM CLEMENT:
A discrete network is a synonym for a SINGLE network. Usually the sensor will monitor a single network segment, however there are IDS today that allow you to monitor multiple LAN's at the same time.

References used for this question:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 62.
and
Official (ISC)2 Guide to the CISSP CBK, Hal Tipton and Kevin Henry, Page 196
and
Additional information on IDS systems can be found here: http://en.wikipedia.org/wiki/Intrusion_detection_system

QUESTION 455
Which of the following are additional terms used to describe knowledge-based IDS and behavior-based IDS?

A. signature-based IDS and statistical anomaly-based IDS, respectively
B. signature-based IDS and dynamic anomaly-based IDS, respectively
C. anomaly-based IDS and statistical-based IDS, respectively
D. signature-based IDS and motion anomaly-based IDS, respectively.

Correct Answer: A
Section: Analysis and Monitoring

Explanation
Explanation/Reference:
The two current conceptual approaches to Intrusion Detection methodology are knowledge-based ID systems and behavior-based ID systems, sometimes referred to as signature-based ID and statistical anomaly-based ID, respectively.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 63.

QUESTION 456
Which of the following Intrusion Detection Systems (IDS) uses a database of attacks, known system vulnerabilities, monitoring current attempts to exploit those vulnerabilities, and then triggers an alarm if an attempt is found?

A. Knowledge-Based ID System
B. Application-Based ID System
C. Host-Based ID System
D. Network-Based ID System

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Knowledge-based Intrusion Detection Systems use a database of previous attacks and known system vulnerabilities to look for current attempts to exploit their vulnerabilities, and trigger an alarm if an attempt is found.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 87.

Application-Based ID System - "a subset of HIDS that analyze what's going on in an application using the transaction log files of the application." Source: Official ISC2 CISSP CBK Review Seminar Student Manual Version 7.0 p. 87

Host-Based ID System - "an implementation of IDS capabilities at the host level. Its most significant difference from NIDS is intrusion detection analysis, and related processes are limited to the boundaries of the host." Source: Official ISC2 Guide to the CISSP CBK - p. 197

Network-Based ID System - "a network device, or dedicated system attached to teh network, that monitors traffic traversing teh network segment for which it is integrated." Source: Official ISC2 Guide to the CISSP CBK - p. 196

QUESTION 457
Knowledge-based Intrusion Detection Systems (IDS) are more common than:

A. Network-based IDS
B. Host-based IDS

C. Behavior-based IDS
D. Application-Based IDS

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Knowledge-based IDS are more common than behavior-based ID systems.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 63.

Application-Based IDS - "a subset of HIDS that analyze what's going on in an application using the transaction log files of the application." Source: Official ISC2 CISSP CBK Review Seminar Student Manual Version 7.0 p. 87

Host-Based IDS - "an implementation of IDS capabilities at the host level. Its most significant difference from NIDS is intrusion detection analysis, and related processes are limited to the boundaries of the host." Source: Official ISC2 Guide to the CISSP CBK - p. 197

Network-Based IDS - "a network device, or dedicated system attached to the network, that monitors traffic traversing the network segment for which it is integrated." Source: Official ISC2 Guide to the CISSP CBK - p. 196

CISSP for dummies a book that we recommend for a quick overview of the 10 domains has nice and concise coverage of the subject:

Intrusion detection is defined as real-time monitoring and analysis of network activity and data for potential vulnerabilities and attacks in progress. One major limitation of current intrusion detection system (IDS) technologies is the requirement to filter false alarms lest the operator (system or security administrator) be overwhelmed with data. IDSes are classified in many different ways, including active and passive, network-based and host-based, and knowledge-based and behavior-based: Active and passive IDS

An active IDS (now more commonly known as an intrusion prevention system — IPS) is a system that's configured to automatically block suspected attacks in progress without any intervention required by an operator. IPS has the advantage of providing real-time corrective action in response to an attack but has many disadvantages as well. An IPS must be placed in-line along a network boundary; thus, the IPS itself is susceptible to attack. Also, if false alarms and legitimate traffic haven't been properly identified and filtered, authorized users and applications may be improperly denied access. Finally, the IPS itself may be used to effect a Denial of Service (DoS) attack by intentionally flooding the system with alarms that cause it to block connections until no connections or bandwidth are available.

A passive IDS is a system that's configured only to monitor and analyze network traffic activity and alert an operator to potential vulnerabilities and attacks. It isn't capable of performing any protective or corrective functions on its own. The major advantages of passive IDSes are that these systems can be easily and rapidly deployed and are not normally susceptible to attack themselves. Network-based and host-based IDS

A network-based IDS usually consists of a network appliance (or sensor) with a Network Interface Card (NIC) operating in promiscuous mode and a separate management interface. The IDS is placed along a network segment or boundary and monitors all traffic on that segment.

A host-based IDS requires small programs (or agents) to be installed on individual systems to be monitored. The agents monitor the operating system and write

data to log files and/or trigger alarms. A host-based IDS can only monitor the individual host systems on which the agents are installed; it doesn't monitor the entire network.
Knowledge-based and behavior-based IDS

A knowledge-based (or signature-based) IDS references a database of previous attack profiles and known system vulnerabilities to identify active intrusion attempts. Knowledge-based IDS is currently more common than behavior-based IDS.

Advantages of knowledge-based systems include the following:

It has lower false alarm rates than behavior-based IDS.

Alarms are more standardized and more easily understood than behavior-based IDS.

Disadvantages of knowledge-based systems include these:
Signature database must be continually updated and maintained.
New, unique, or original attacks may not be detected or may be improperly classified.

A behavior-based (or statistical anomaly–based) IDS references a baseline or learned pattern of normal system activity to identify active intrusion attempts. Deviations from this baseline or pattern cause an alarm to be triggered.

Advantages of behavior-based systems include that they
Dynamically adapt to new, unique, or original attacks.
Are less dependent on identifying specific operating system vulnerabilities.

Disadvantages of behavior-based systems include
Higher false alarm rates than knowledge-based IDSes.
Usage patterns that may change often and may not be static enough to implement an effective behavior-based IDS.

QUESTION 458
Which of the following types of Intrusion Detection Systems uses behavioral characteristics of a system’s operation or network traffic to draw conclusions on whether the traffic represents a risk to the network or host?

A. Network-based ID systems.
B. Anomaly Detection.
C. Host-based ID systems.
D. Signature Analysis.

Correct Answer: B

Section: Analysis and Monitoring
Explanation

Explanation/Reference:
There are two basic IDS analysis methods: pattern matching (also called signature analysis) and anomaly detection.

Anomaly detection uses behavioral characteristics of a system's operation or network traffic to draw conclusions on whether the traffic represents a risk to the network or host. Anomalies may include but are not limited to:

Multiple failed log-on attempts
Users logging in at strange hours
Unexplained changes to system clocks
Unusual error messages

The following are incorrect answers:
Network-based ID Systems (NIDS) are usually incorporated into the network in a passive architecture, taking advantage of promiscuous mode access to the network. This means that it has visibility into every packet traversing the network segment. This allows the system to inspect packets and monitor sessions without impacting the network or the systems and applications utilizing the network.

Host-based ID Systems (HIDS) is the implementation of IDS capabilities at the host level. Its most significant difference from NIDS is that related processes are limited to the boundaries of a single-host system. However, this presents advantages in effectively detecting objectionable activities because the IDS process is running directly on the host system, not just observing it from the network. This offers unfettered access to system logs, processes, system information, and device information, and virtually eliminates limits associated with encryption. The level of integration represented by HIDS increases the level of visibility and control at the disposal of the HIDS application.

Signature Analysis Some of the first IDS products used signature analysis as their detection method and simply looked for known characteristics of an attack (such as specific packet sequences or text in the data stream) to produce an alert if that pattern was detected. For example, an attacker manipulating an FTP server may use a tool that sends a specially constructed packet. If that particular packet pattern is known, it can be represented in the form of a signature that IDS can then compare to incoming packets. Pattern-based IDS will have a database of hundreds, if not thousands, of signatures that are compared to traffic streams. As new attack signatures are produced, the system is updated, much like antivirus solutions. There are drawbacks to pattern-based IDS. Most importantly, signatures can only exist for known attacks. If a new or different attack vector is used, it will not match a known signature and, thus, slip past the IDS. Additionally, if an attacker knows that the IDS is present, he or she can alter his or her methods to avoid detection. Changing packets and data streams, even slightly, from known signatures can cause an IDS to miss the attack. As with some antivirus systems, the IDS is only as good as the latest signature database on the system.

For additional information on Intrusion Detection Systems - http://en.wikipedia.org/wiki/Intrusion_detection_system

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 3623-3625, 3649-3654, 36663686). Auerbach Publications. Kindle Edition.

QUESTION 459
What ensures that the control mechanisms correctly implement the security policy for the entire life cycle of an information system?

A. Accountability controls
B. Mandatory access controls
C. Assurance procedures
D. Administrative controls

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Controls provide accountability for individuals accessing information. Assurance procedures ensure that access control mechanisms correctly implement the security policy for the entire life cycle of an information system.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 33).

QUESTION 460
What IDS approach relies on a database of known attacks?

A. Signature-based intrusion detection
B. Statistical anomaly-based intrusion detection
C. Behavior-based intrusion detection
D. Network-based intrusion detection

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
A weakness of the signature-based (or knowledge-based) intrusion detection approach is that only attack signatures that are stored in a database are detected.
Network-based intrusion detection can either be signature-based or statistical anomaly-based (also called behavior-based).
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 2: Access control systems (page 49).

QUESTION 461

Which of the following is most likely to be useful in detecting intrusions?

A. Access control lists
B. Security labels
C. Audit trails
D. Information security policies

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
If audit trails have been properly defined and implemented, they will record information that can assist in detecting intrusions.
Source: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, Chapter 4: Access Control (page 186).

QUESTION 462
Which conceptual approach to intrusion detection system is the most common?

A. Behavior-based intrusion detection
B. Knowledge-based intrusion detection
C. Statistical anomaly-based intrusion detection
D. Host-based intrusion detection

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
There are two conceptual approaches to intrusion detection. Knowledge-based intrusion detection uses a database of known vulnerabilities to look for current attempts to exploit them on a system and trigger an alarm if an attempt is found. The other approach, not as common, is called behaviour-based or statistical analysis-based. A host-based intrusion detection system is a common implementation of intrusion detection, not a conceptual approach.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 3: Telecommunications and Network Security (page 63).
Also: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 4: Access Control (pages 193-194).

QUESTION 463
Several analysis methods can be employed by an IDS, each with its own strengths and weaknesses, and their applicability to any given situation should be carefully considered. There are two basic IDS analysis methods that exists. Which of the basic method is more prone to false positive?

A. Pattern Matching (also called signature analysis)
B. Anomaly Detection
C. Host-based intrusion detection
D. Network-based intrusion detection

Correct Answer: B
Section: Analysis and Monitoring
Explanation
Explanation/Reference:
Several analysis methods can be employed by an IDS, each with its own strengths and weaknesses, and their applicability to any given situation should be carefully considered.

There are two basic IDS analysis methods:

1. Pattern Matching (also called signature analysis), and
2. Anomaly detection

PATTERN MATCHING
Some of the first IDS products used signature analysis as their detection method and simply looked for known characteristics of an attack (such as specific packet sequences or text in the data stream) to produce an alert if that pattern was detected. If a new or different attack vector is used, it will not match a known signature and, thus, slip past the IDS.

ANOMALY DETECTION
Alternately, anomaly detection uses behavioral characteristics of a system's operation or network traffic to draw conclusions on whether the traffic represents a risk to the network or host. Anomalies may include but are not limited to:

Multiple failed log-on attempts
Users logging in at strange hours
Unexplained changes to system clocks
Unusual error messages
Unexplained system shutdowns or restarts
Attempts to access restricted files

An anomaly-based IDS tends to produce more data because anything outside of the expected behavior is reported. Thus, they tend to report more false positives as expected behavior patterns change. An advantage to anomaly-based IDS is that, because they are based on behavior identification and not specific patterns of traffic, they are often able to detect new attacks that may be overlooked by a signature-based system. Often information from an anomaly-based IDS may be used to create a pattern for a signature-based IDS.

Host Based Intrusion Detection (HIDS)

HIDS is the implementation of IDS capabilities at the host level. Its most significant difference from NIDS is that related processes are limited to the boundaries of a single-host system. However, this presents advantages in effectively detecting objectionable activities because the IDS process is running directly on the host system, not just observing it from the network. This offers unfettered access to system logs, processes, system information, and device information, and virtually eliminates limits associated with encryption. The level of integration represented by HIDS increases the level of visibility and control at the disposal of the HIDS application.

Network Based Intrustion Detection (NIDS)
NIDS are usually incorporated into the network in a passive architecture, taking advantage of promiscuous mode access to the network. This means that it has visibility into every packet traversing the network segment. This allows the system to inspect packets and monitor sessions without impacting the network or the systems and applications utilizing the network.

Below you have other ways that instrusion detection can be performed:

Stateful Matching Intrusion Detection
Stateful matching takes pattern matching to the next level. It scans for attack signatures in the context of a stream of traffic or overall system behavior rather than the individual packets or discrete system activities. For example, an attacker may use a tool that sends a volley of valid packets to a targeted system. Because all the packets are valid, pattern matching is nearly useless. However, the fact that a large volume of the packets was seen may, itself, represent a known or potential attack pattern. To evade attack, then, the attacker may send the packets from multiple locations with long wait periods between each transmission to either confuse the signature detection system or exhaust its session timing window. If the IDS service is tuned to record and analyze traffic over a long period of time it may detect such an attack. Because stateful matching also uses signatures, it too must be updated regularly and, thus, has some of the same limitations as pattern matching.

Statistical Anomaly-Based Intrusion Detection
The statistical anomaly-based IDS analyzes event data by comparing it to typical, known, or predicted traffic profiles in an effort to find potential security breaches. It attempts to identify suspicious behavior by analyzing event data and identifying patterns of entries that deviate from a predicted norm. This type of detection method can be very effective and, at a very high level, begins to take on characteristics seen in IPS by establishing an expected baseline of behavior and acting on divergence from that baseline. However, there are some potential issues that may surface with a statistical IDS. Tuning the IDS can be challenging and, if not performed regularly, the system will be prone to false positives. Also, the definition of normal traffic can be open to interpretation and does not preclude an attacker from using normal activities to penetrate systems. Additionally, in a large, complex, dynamic corporate environment, it can be difficult, if not impossible, to clearly define “normal” traffic. The value of statistical analysis is that the system has the potential to detect previously unknown attacks. This is a huge departure from the limitation of matching previously known signatures. Therefore, when combined with signature matching technology, the statistical anomaly-based IDS can be very effective.

Protocol Anomaly-Based Intrusion Detection
A protocol anomaly-based IDS identifies any unacceptable deviation from expected behavior based on known network protocols. For example, if the IDS is monitoring an HTTP session and the traffic contains attributes that deviate from established HTTP session protocol standards, the IDS may view that as a malicious attempt to manipulate the protocol, penetrate a firewall, or exploit a vulnerability. The value of this method is directly related to the use of well-known or well-defined protocols within an environment. If an organization primarily uses well-known protocols (such as HTTP, FTP, or telnet) this can be an effective method

of performing intrusion detection. In the face of custom or nonstandard protocols, however, the system will have more difficulty or be completely unable to determine the proper packet format. Interestingly, this type of method is prone to the same challenges faced by signature-based IDSs. For example, specific protocol analysis modules may have to be added or customized to deal with unique or new protocols or unusual use of standard protocols. Nevertheless, having an IDS that is intimately aware of valid protocol use can be very powerful when an organization employs standard implementations of common protocols.

Traffic Anomaly-Based Intrusion
Detection A traffic anomaly-based IDS identifies any unacceptable deviation from expected behavior based on actual traffic structure. When a session is established between systems, there is typically an expected pattern and behavior to the traffic transmitted in that session. That traffic can be compared to expected traffic conduct based on the understandings of traditional system interaction for that type of connection. Like the other types of anomaly-based IDS, traffic anomalybased IDS relies on the ability to establish “normal” patterns of traffic and expected modes of behavior in systems, networks, and applications. In a highly dynamic environment it may be difficult, if not impossible, to clearly define these parameters.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 3664-3686). Auerbach Publications. Kindle Edition.

and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 3711-3734). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 3694-3711). Auerbach Publications. Kindle Edition.

QUESTION 464
In order to enable users to perform tasks and duties without having to go through extra steps it is important that the security controls and mechanisms that are in place have a degree of?

A. Complexity
B. Non-transparency
C. Transparency
D. Simplicity

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
The security controls and mechanisms that are in place must have a degree of transparency.

This enables the user to perform tasks and duties without having to go through extra steps because of the presence of the security controls. Transparency also does not let the user know too much about the controls, which helps prevent him from figuring out how to circumvent them. If the controls are too obvious, an attacker can figure out how to compromise them more easily.

Security (more specifically, the implementation of most security controls) has long been a sore point with users who are subject to security controls. Historically, security controls have been very intrusive to users, forcing them to interrupt their work flow and remember arcane codes or processes (like long passwords or access codes), and have generally been seen as an obstacle to getting work done. In recent years, much work has been done to remove that stigma of security controls as a detractor from the work process adding nothing but time and money. When developing access control, the system must be as transparent as possible to the end user. The users should be required to interact with the system as little as possible, and the process around using the control should be engineered so as to involve little effort on the part of the user.

For example, requiring a user to swipe an access card through a reader is an effective way to ensure a person is authorized to enter a room. However, implementing a technology (such as RFID) that will automatically scan the badge as the user approaches the door is more transparent to the user and will do less to impede the movement of personnel in a busy area.

In another example, asking a user to understand what applications and data sets will be required when requesting a system ID and then specifically requesting access to those resources may allow for a great deal of granularity when provisioning access, but it can hardly be seen as transparent. A more transparent process would be for the access provisioning system to have a role-based structure, where the user would simply specify the role he or she has in the organization and the system would know the specific resources that user needs to access based on that role. This requires less work and interaction on the part of the user and will lead to more accurate and secure access control decisions because access will be based on predefined need, not user preference.

When developing and implementing an access control system special care should be taken to ensure that the control is as transparent to the end user as possible and interrupts his work flow as little as possible.

The following answers were incorrect:
All of the other detractors were incorrect.

Reference(s) used for this question:

HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 6th edition. Operations Security, Page 1239-1240

Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 25278-25281). McGraw-Hill. Kindle Edition.

Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Access Control ((ISC)2 Press) (Kindle Locations 713-729). Auerbach Publications. Kindle Edition.

QUESTION 465
Which of the following is required in order to provide accountability?

A. Authentication
B. Integrity
C. Confidentiality
D. Audit trails

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Accountability can actually be seen in two different ways:

1) Although audit trails are also needed for accountability, no user can be accountable for their actions unless properly authenticated.

2) Accountability is another facet of access control. Individuals on a system are responsible for their actions. This accountability property enables system activities to be traced to the proper individuals. Accountability is supported by audit trails that record events on the system and network. Audit trails can be used for intrusion detection and for the reconstruction of past events. Monitoring individual activities, such as keystroke monitoring, should be accomplished in accordance with the company policy and appropriate laws. Banners at the log-on time should notify the user of any monitoring that is being conducted.

The point is that unless you employ an appropriate auditing mechanism, you don't have accountability. Authorization only gives a user certain permissions on the network. Accountability is far more complex because it also includes intrusion detection, unauthorized actions by both unauthorized users and authorized users, and system faults. The audit trail provides the proof that unauthorized modifications by both authorized and unauthorized users took place. No proof, No accountability.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 50.

The Shon Harris AIO book, 4th Edition, on Page 243 also states:

Auditing Capabilities ensures users are accountable for their actions, verify that the secutiy policies are enforced,
and can be used as investigation tools. Accountability is tracked by recording user, system, and application
activities.
This recording is done through auditing functions and mechanisms within an operating sytem or application.
Audit trail contain information about operating System activities, application events, and user actions.

QUESTION 466
Which of the following is NOT a valid reason to use external penetration service firms rather than corporate resources?

A. They are more cost-effective
B. They offer a lack of corporate bias

C. They use highly talented ex-hackers
D. They ensure a more complete reporting

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Two points are important to consider when it comes to ethical hacking: integrity and independence.

By not using an ethical hacking firm that hires or subcontracts to ex-hackers of others who have criminal records, an entire subset of risks can be avoided by an organization. Also, it is not cost-effective for a single firm to fund the effort of the ongoing research and development, systems development, and maintenance that is needed to operate state-of-the-art proprietary and open source testing tools and techniques.

External penetration firms are more effective than internal penetration testers because they are not influenced by any previous system security decisions, knowledge of the current system environment, or future system security plans. Moreover, an employee performing penetration testing might be reluctant to fully report security gaps.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Appendix F: The Case for Ethical Hacking (page 517).

QUESTION 467
Which of the following statements pertaining to ethical hacking is incorrect?

A. An organization should use ethical hackers who do not sell auditing, hardware, software, firewall, hosting, and/or networking services.
B. Testing should be done remotely to simulate external threats.
C. Ethical hacking should not involve writing to or modifying the target systems negatively.
D. Ethical hackers never use tools that have the potential of affecting servers or services.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
This means that many of the tools used for ethical hacking have the potential of exploiting vulnerabilities and causing disruption to IT system. It is up to the individuals performing the tests to be familiar with their use and to make sure that no such disruption can happen or at least shoudl be avoided.

The first step before sending even one single packet to the target would be to have a signed agreement with clear rules of engagement and a signed contract. The signed contract explains to the client the associated risks and the client must agree to them before you even send one packet to the target range. This way

the client understand that some of the test could lead to interruption of service or even crash a server. The client signs that he is aware of such risks and willing to accept them.

The following are incorrect answers:
An organization should use ethical hackers who do not sell auditing, hardware, software, firewall, hosting, and/or networking services. An ethical hacking firm's independence can be questioned if they sell security solutions at the same time as doing testing for the same client. There has to be independance between the judge (the tester) and the accuse (the client).

Testing should be done remotely to simulate external threats Testing simulating a cracker from the Internet is often time one of the first test being done, this is to validate perimeter security. By performing tests remotely, the ethical hacking firm emulates the hacker's approach more realistically.

Ethical hacking should not involve writing to or modifying the target systems negatively. Even though ethical hacking should not involve negligence in writing to or modifying the target systems or reducing its response time, comprehensive penetration testing has to be performed using the most complete tools available just like a real cracker would.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Appendix F: The Case for Ethical Hacking (page 520).

QUESTION 468
The viewing of recorded events after the fact using a closed-circuit TV camera is considered a

A. Preventative control.
B. Detective control
C. Compensating control
D. Corrective control

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Detective security controls are like a burglar alarm. They detect and report an unauthorized or undesired event (or an attempted undesired event). Detective security controls are invoked after the undesirable event has occurred. Example detective security controls are log monitoring and review, system audit, file integrity checkers, and motion detection.

Visual surveillance or recording devices such as closed circuit television are used in conjunction with guards in order to enhance their surveillance ability and to record events for future analysis or prosecution.

When events are monitored, it is considered preventative whereas recording of events is considered detective in nature.

Below you have explanations of other types of security controls from a nice guide produce by James Purcell (see reference below):

Preventive security controls are put into place to prevent intentional or unintentional disclosure, alteration, or destruction (D.A.D.) of sensitive information. Some example preventive controls follow:

Policy – Unauthorized network connections are prohibited.
Firewall – Blocks unauthorized network connections.
Locked wiring closet – Prevents unauthorized equipment from being physically plugged into a network switch.

Notice in the preceding examples that preventive controls crossed administrative, technical, and physical categories discussed previously. The same is true for any of the controls discussed in this section.

Corrective security controls are used to respond to and fix a security incident. Corrective security controls also limit or reduce further damage from an attack. Examples follow:

Procedure to clean a virus from an infected system
A guard checking and locking a door left unlocked by a careless employee
Updating firewall rules to block an attacking IP address

Note that in many cases the corrective security control is triggered by a detective security control.
Recovery security controls are those controls that put a system back into production after an incident. Most Disaster Recovery activities fall into this category. For example, after a disk failure, data is restored from a backup tape.

Directive security controls are the equivalent of administrative controls. Directive controls direct that some action be taken to protect sensitive organizational information. The directive can be in the form of a policy, procedure, or guideline.

Deterrent security controls are controls that discourage security violations. For instance, “Unauthorized Access Prohibited” signage may deter a trespasser from entering an area. The presence of security cameras might deter an employee from stealing equipment. A policy that states access to servers is monitored could deter unauthorized access.

Compensating security controls are controls that provide an alternative to normal controls that cannot be used for some reason. For instance, a certain server cannot have antivirus software installed because it interferes with a critical application. A compensating control would be to increase monitoring of that server or isolate that server on its own network segment.

Note that there is a third popular taxonomy developed by NIST and described in NIST Special Publication 800-53, “Recommended Security Controls for Federal Information Systems.” NIST categorizes security controls into 3 classes and then further categorizes the controls within the classes into 17 families. Within each security control family are dozens of specific controls. The NIST taxonomy is not covered on the CISSP exam but is one the CISSP should be aware of if you are employed within the US federal workforce.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 10: Physical security (page 340).
and
CISSP Study Guide By Eric Conrad, Seth Misenar, Joshua Feldman, page 50-52
and
Security Control Types and Operational Security, James E. Purcell, http://www.giac.org/cissp-papers/207.pdf

QUESTION 469
Controls provide accountability for individuals who are accessing sensitive information. This accountability is accomplished:

A. through access control mechanisms that require identification and authentication and through the audit function.
B. through logical or technical controls involving the restriction of access to systems and the protection of information.
C. through logical or technical controls but not involving the restriction of access to systems and the protection of information.
D. through access control mechanisms that do not require identification and authentication and do not operate through the audit function.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Controls provide accountability for individuals who are accessing sensitive information. This accountability is accomplished through access control mechanisms that require identification and authentication and through the audit function. These controls must be in accordance with and accurately represent the organization's security policy. Assurance procedures ensure that the control mechanisms correctly implement the security policy for the entire life cycle of an information system.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 33.

QUESTION 470
Which of the following tools is less likely to be used by a hacker?

A. l0phtcrack
B. Tripwire
C. OphCrack
D. John the Ripper

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:

Tripwire is an integrity checking product, triggering alarms when important files (e.g. system or configuration files) are modified.

This is a tool that is not likely to be used by hackers, other than for studying its workings in order to circumvent it.

Other programs are password-cracking programs and are likely to be used by security administrators as well as by hackers. More info regarding Tripwire available on the Tripwire, Inc. Web Site.
NOTE:
The biggest competitor to the commercial version of Tripwire is the freeware version of Tripwire. You can get the Open Source version of Tripwire at the following URL: http://sourceforge.net/projects/tripwire/

QUESTION 471
Why would anomaly detection IDSs often generate a large number of false positives?

A. Because they can only identify correctly attacks they already know about.
B. Because they are application-based are more subject to attacks.
C. Because they can't identify abnormal behavior.
D. Because normal patterns of user and system behavior can vary wildly.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Unfortunately, anomaly detectors and the Intrusion Detection Systems (IDS) based on them often produce a large number of false alarms, as normal patterns of user and system behavior can vary wildly. Being only able to identify correctly attacks they already know about is a characteristic of misuse detection (signaturebased) IDSs. Application-based IDSs are a special subset of host-based IDSs that analyze the events transpiring within a software application. They are more vulnerable to attacks than host-based IDSs. Not being able to identify abnormal behavior would not cause false positives, since they are not identified.

Source: DUPUIS, Cl?ment, Access Control Systems and Methodology CISSP Open Study Guide, version 1.0, march 2002 (page 92).

QUESTION 472
What is the essential difference between a self-audit and an independent audit?

A. Tools used
B. Results
C. Objectivity
D. Competence

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
To maintain operational assurance, organizations use two basic methods: system audits and monitoring. Monitoring refers to an ongoing activity whereas audits are one-time or periodic events and can be either internal or external. The essential difference between a self-audit and an independent audit is objectivity, thus indirectly affecting the results of the audit. Internal and external auditors should have the same level of competence and can use the same tools.

Source: SWANSON, Marianne & GUTTMAN, Barbara, National Institute of Standards and Technology (NIST), NIST Special Publication 800-14, Generally Accepted Principles and Practices for Securing Information Technology Systems, September 1996 (page 25).

QUESTION 473
A periodic review of user account management should not determine:

A. Conformity with the concept of least privilege.
B. Whether active accounts are still being used.
C. Strength of user-chosen passwords.
D. Whether management authorizations are up-to-date.

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Organizations should have a process for (1) requesting, establishing, issuing, and closing user accounts; (2) tracking users and their respective access authorizations; and (3) managing these functions.

Reviews should examine the levels of access each individual has, conformity with the concept of least privilege, whether all accounts are still active, whether management authorizations are up-to-date, whether required training has been completed, and so forth. These reviews can be conducted on at least two levels: (1) on an application-by-application basis, or (2) on a system wide basis.

The strength of user passwords is beyond the scope of a simple user account management review, since it requires specific tools to try and crack the password file/ database through either a dictionary or brute-force attack in order to check the strength of passwords.

Reference(s) used for this question:
SWANSON, Marianne & GUTTMAN, Barbara, National Institute of Standards and Technology (NIST), NIST Special Publication 800-14, Generally Accepted Principles and Practices for Securing Information Technology Systems, September 1996 (page 28).

QUESTION 474
Due care is not related to:

A. Good faith
B. Prudent man
C. Profit
D. Best interest

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Officers and directors of a company are expected to act carefully in fulfilling their tasks. A director shall act in good faith, with the care an ordinarily prudent person in a like position would exercise under similar circumstances and in a manner he reasonably believes is in the best interest of the enterprise. The notion of profit would tend to go against the due care principle.

Source: ANDRESS, Mandy, Exam Cram CISSP, Coriolis, 2001, Chapter 10: Law, Investigation, and Ethics (page 186).

QUESTION 475
Which of the following is not a preventive operational control?

A. Protecting laptops, personal computers and workstations.
B. Controlling software viruses.
C. Controlling data media access and disposal.
D. Conducting security awareness and technical training.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Conducting security awareness and technical training to ensure that end users and system users are aware of the rules of behaviour and their responsibilities in protecting the organization's mission is an example of a preventive management control, therefore not an operational control.
Source: STONEBURNER, Gary et al., NIST Special publication 800-30, Risk management Guide for Information Technology Systems, 2001 (page 37).

QUESTION 476
Which of the following questions are least likely to help in assessing controls covering audit trails?

A. Does the audit trail provide a trace of user actions?
B. Are incidents monitored and tracked until resolved?
C. Is access to online logs strictly controlled?
D. Is there separation of duties between security personnel who administer the access control function and those who administer the audit trail?

Correct Answer: B
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Audit trails maintain a record of system activity by system or application processes and by user activity. In conjunction with appropriate tools and procedures, audit trails can provide individual accountability, a means to reconstruct events, detect intrusions, and identify problems. Audit trail controls are considered technical controls. Monitoring and tracking of incidents is more an operational control related to incident response capability.

Reference(s) used for this question:

SWANSON, Marianne, NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems, November 2001 (Pages A-50 to A51).

NOTE: NIST SP 800-26 has been superceded By: FIPS 200, SP 800-53, SP 800-53A
You can find the new replacement at: http://csrc.nist.gov/publications/PubsSPs.html
However, if you really wish to see the old standard, it is listed as an archived document
at: http://csrc.nist.gov/publications/PubsSPArch.html

QUESTION 477
What setup should an administrator use for regularly testing the strength of user passwords?

A. A networked workstation so that the live password database can easily be accessed by the cracking program.
B. A networked workstation so the password database can easily be copied locally and processed by the cracking program.
C. A standalone workstation on which the password database is copied and processed by the cracking program.
D. A password-cracking program is unethical; therefore it should not be used.

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:

Poor password selection is frequently a major security problem for any system's security. Administrators should obtain and use password-guessing programs frequently to identify those users having easily guessed passwords.

Because password-cracking programs are very CPU intensive and can slow the system on which it is running, it is a good idea to transfer the encrypted passwords to a standalone (not networked) workstation. Also, by doing the work on a non-networked machine, any results found will not be accessible by anyone unless they have physical access to that system.

Out of the four choice presented above this is the best choice.
However, in real life you would have strong password policies that enforce complexity requirements and does not let the user choose a simple or short password that can be easily cracked or guessed. That would be the best choice if it was one of the choice presented.

Another issue with password cracking is one of privacy. Many password cracking tools can avoid this by only showing the password was cracked and not showing what the password actually is. It is masking the password being used from the person doing the cracking.

Source: National Security Agency, Systems and Network Attack Center (SNAC), The 60 Minute Network Security Guide, February 2002, page 8.

QUESTION 478
If an organization were to monitor their employees' e-mail, it should not:

A. Monitor only a limited number of employees.
B. Inform all employees that e-mail is being monitored.
C. Explain who can read the e-mail and how long it is backed up.
D. Explain what is considered an acceptable use of the e-mail system.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Monitoring has to be conducted is a lawful manner and applied in a consistent fashion; thus should be applied uniformly to all employees, not only to a small number.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Chapter 9: Law, Investigation, and Ethics (page 304).

QUESTION 479
Which of the following is the BEST way to detect software license violations?

A. Implementing a corporate policy on copyright infringements and software use.

B. Requiring that all PCs be diskless workstations.
C. Installing metering software on the LAN so applications can be accessed through the metered software.
D. Regularly scanning PCs in use to ensure that unauthorized copies of software have not been loaded on the PC.

Correct Answer: D
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
The best way to prevent and detect software license violations is to regularly scan used PCs, either from the LAN or directly, to ensure that unauthorized copies of software have not been loaded on the PC.

Other options are not detective.

A corporate policy is not necessarily enforced and followed by all employees.

Software can be installed from other means than floppies or CD-ROMs (from a LAN or even downloaded from the Internet) and software metering only concerns applications that are registered.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, Chapter 3: Technical Infrastructure and Operational Practices (page 108).

QUESTION 480
In what way can violation clipping levels assist in violation tracking and analysis?

A. Clipping levels set a baseline for acceptable normal user errors, and violations exceeding that threshold will be recorded for analysis of why the violations occurred.
B. Clipping levels enable a security administrator to customize the audit trail to record only those violations which are deemed to be security relevant.
C. Clipping levels enable the security administrator to customize the audit trail to record only actions for users with access to user accounts with a privileged status.
D. Clipping levels enable a security administrator to view all reductions in security levels which have been made to user accounts which have incurred violations.

Correct Answer: A
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
Companies can set predefined thresholds for the number of certain types of errors that will be allowed before the activity is considered suspicious. The threshold is a baseline for violation activities that may be normal for a user to commit before alarms are raised. This baseline is referred to as a clipping level.

The following are incorrect answers:
Clipping levels enable a security administrator to customize the audit trail to record only those violations which are deemed to be security relevant. This is not the best answer, you would not record ONLY security relevant violations, all violations would be recorded as well as all actions performed by authorized users which may not trigger a violation. This could allow you to indentify abnormal activities or fraud after the fact.

Clipping levels enable the security administrator to customize the audit trail to record only actions for users with access to user accounts with a privileged status. It could record all security violations whether the user is a normal user or a privileged user.

Clipping levels enable a security administrator to view all reductions in security levels which have been made to user accounts which have incurred violations. The keyword "ALL" makes this question wrong. It may detect SOME but not all of violations. For example, application level attacks may not be detected.

Reference(s) used for this question:

Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 1239). McGraw-Hill. Kindle Edition.
and
TIPTON, Hal, (ISC)2, Introduction to the CISSP Exam presentation.

QUESTION 481
How often should a Business Continuity Plan be reviewed?

A. At least once a month
B. At least every six months
C. At least once a year
D. At least Quarterly

Correct Answer: C
Section: Analysis and Monitoring
Explanation

Explanation/Reference:
As stated in SP 800-34 Rev. 1:
To be effective, the plan must be maintained in a ready state that accurately reflects system requirements, procedures, organizational structure, and policies. During the Operation/Maintenance phase of the SDLC, information systems undergo frequent changes because of shifting business needs, technology upgrades, or new internal or external policies.

As a general rule, the plan should be reviewed for accuracy and completeness at an organization-defined frequency (at least once a year for the purpose of the exam) or whenever significant changes occur to any element of the plan. Certain elements, such as contact lists, will require more frequent reviews.

Remember, there could be two good answers as specified above. Either once a year or whenever significant changes occur to the plan. You will of course get only one of the two presented within you exam.

Reference(s) used for this question:
NIST SP 800-34 Revision 1 **QUESTION 482**
Which of the following best describes what would be expected at a "hot site"?

A. Computers, climate control, cables and peripherals
B. Computers and peripherals
C. Computers and dedicated climate control systems.
D. Dedicated climate control systems

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A Hot Site contains everything needed to become operational in the shortest amount of time.

The following answers are incorrect:

Computers and peripherals. Is incorrect because no mention is made of cables. You would not be fully operational without those.

Computers and dedicated climate control systems. Is incorrect because no mention is made of peripherals. You would not be fully operational without those.

Dedicated climate control systems. Is incorrect because no mentionis made of computers, cables and peripherals. You would not be fully operational without those.

According to the OIG, a hot site is defined as a fully configured site with complete customer required hardware and software provided by the service provider. A hot site in the context of the CBK is always a RENTAL place. If you have your own site fully equipped that you make use of in case of disaster that would be called a redundant site or an alternate site.

Wikipedia: "A hot site is a duplicate of the original site of the organization, with full computer systems as well as near-complete backups of user data."

References:

OIG CBK, Business Continuity and Disaster Recovery Planning (pages 367 - 368) AIO, 3rd Edition, Business Continuity Planning (pages 709 - 714) AIO, 4th Edition, Business Continuity Planning , p 790.

Wikipedia - http://en.wikipedia.org/wiki/Hot_site#Hot_Sites

QUESTION 483
Who should direct short-term recovery actions immediately following a disaster?

A. Chief Information Officer.

B. Chief Operating Officer.
C. Disaster Recovery Manager.
D. Chief Executive Officer.

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Disaster Recovery Manager should also be a member of the team that assisted in the development of the Disaster Recovery Plan. Senior-level management need to support the process but would not be involved with the initial process.

The following answers are incorrect:

Chief Information Officer. Is incorrect because the Senior-level management are the ones to authorize the recovery plan and process but during the initial recovery process they will most likely be heavily involved in other matters.

Chief Operating Officer. Is incorrect because the Senior-level management are the ones to authorize the recovery plan and process but during the initial recovery process they will most likely be heavily involved in other matters.

Chief Executive Officer. Is incorrect because the Senior-level management are the ones to authorize the recovery plan and process but during the initial recovery process they will most likely be heavily involved in other matters.

QUESTION 484
Which one of the following represents an ALE calculation?

A. single loss expectancy x annualized rate of occurrence.
B. gross loss expectancy x loss frequency.
C. actual replacement cost - proceeds of salvage.
D. asset value x loss expectancy.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Single Loss Expectancy (SLE) is the dollar amount that would be lost if there was a loss of an asset. Annualized Rate of Occurrence (ARO) is an estimated possibility of a threat to an asset taking place in one year (for example if there is a change of a flood occuring once in 10 years the ARO would be .1, and if there was a chance of a flood occuring once in 100 years then the ARO would be .01).

The following answers are incorrect:

gross loss expectancy x loss frequency. Is incorrect because this is a distractor. actual replacement cost - proceeds of salvage. Is incorrect because this is a distractor. asset value x loss expectancy. Is incorrect because this is a distractor.

QUESTION 485
Prior to a live disaster test also called a Full Interruption test, which of the following is most important?

A. Restore all files in preparation for the test.
B. Document expected findings.
C. Arrange physical security for the test site.
D. Conduct of a successful Parallel Test

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A live disaster test or Full interruption test is an actual simulation of the Disaster Recovery Plan. All operations are shut down and brought back online at the alternate site. This test poses the biggest threat to an organization and should not be performed until a successful Parallell Test has been conducted.

1. A Checklist test would be conducted where each of the key players will get a copy of the plan and they read it to make sure it has been properly developed for the specific needs of their departments.

2. A Structure Walk Through would be conducted next. This is when all key players meet together in a room and they walk through the test together to identify shortcoming and dependencies between department.

3. A simulation test would be next. In this case you go through a disaster scenario up to the point where you would move to the alternate site. You do not move to the alternate site and you learn from your mistakes and you improve the plan. It is the right time to find shortcomings.

4. A Parallell Test would be done. You go through a disaster scenario. You move to the alternate site and you process from both sites simultaneously.

5. A full interruption test would be conducted. You move to the alternate site and you resume processing at the alternate site.

The following answers are incorrect:

Restore all files in preparation for the test. Is incorrect because you would restore the files at the alternate site as part of the test not in preparation for the test.

Document expected findings. Is incorrect because it is not the best answer. Documenting the expected findings won't help if you have not performed tests prior to a Full interruption test or live disaster test.

Arrange physical security for the test site. Is incorrect because it is not the best answer. why physical security for the test site is important if you have not performed a successful structured walk-through prior to performing a Full interruption test or live disaster test you might have some unexpected and disasterous results.

QUESTION 486
Which of the following should be emphasized during the Business Impact Analysis (BIA) considering that the BIA focus is on business processes?

A. Composition
B. Priorities
C. Dependencies
D. Service levels

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Business Impact Analysis (BIA) identifies time-critical aspects of the critical business processes, and determines their maximum tolerable downtime. The BIA helps to Identify organization functions, the capabilities of each organization unit to handle outages, and the priority and sequence of functions and applications to be recovered, identify resources required for recovery of those areas and interdependencies

In performing the Business Impact Analysis (BIA) it is very important to consider what the dependencies are. You cannot bring a system up if it depends on another system to be operational. You need to look at not only internal dependencies but external as well. You might not be able to get the raw materials for your business so dependencies are very important aspect of a BIA.

The BIA committee will not truly understand all business processes, the steps that must take place, or the resources and supplies these processes require. So the committee must gather this information from the people who do know— department managers and specific employees throughout the organization. The committee starts by identifying the people who will be part of the BIA data-gathering sessions. The committee needs to identify how it will collect the data from the selected

employees, be it through surveys, interviews, or workshops. Next, the team needs to collect the information by actually conducting surveys, interviews, and workshops. Data points obtained as part of the information gathering will be used later during analysis. It is important that the team members ask about how different tasks— whether processes, transactions, or services, along with any relevant dependencies— get accomplished within the organization.

The following answers are incorrect:
composition This is incorrect because it is not the best answer. While the make up of business may be important, if you have not determined the dependencies first you may not be able to bring the critical business processes to a ready state or have the materials on hand that are needed.

priorities This is incorrect because it is not the best answer. While the priorities of processes are important, if you have not determined the dependencies first you may not be able to bring the critical business processes to a ready state or have the materials on hand that are needed. service levels This is incorrect because it is not the best answer. Service levels are not as important as dependencies.

Reference(s) used for this question:
Schneiter, Andrew (2013-04-15). Official (ISC)2 Guide to the CISSP CBK, Third Edition : Business Continuity and Disaster Recovery Planning (Kindle Locations 188-191). . Kindle Edition. and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 18562-18568). McGraw-Hill. Kindle Edition.

QUESTION 487
Which of the following recovery plan test results would be most useful to management?

A. elapsed time to perform various activities.
B. list of successful and unsuccessful activities.
C. amount of work completed.
D. description of each activity.

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
After a test has been performed the most useful test results for manangement would be knowing what worked and what didn't so that they could correct the mistakes where needed.

The following answers are incorrect:

elapsed time to perform various activities. This is incorrect because it is not the best answer, these results are not as useful as list of successful and unsuccessful activities would be to managment.

amount of work completed. This is incorrect because it is not the best answer, these results are not as useful as list of successful and unsuccessful activities would be to managment.

description of each activity. This is incorrect because it is not the best answer, these results are not as useful as list of successful and unsuccessful activities would be to managment.

QUESTION 488
Which of the following computer recovery sites is only partially equipped with processing equipment?

A. hot site
B. rolling hot site
C. warm site
D. cold site

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A warm site has some basic equipment or in some case almost all of the equipment but it is not sufficient to be operational without bringing in the last backup and in some cases more computers and other equipment.

The following answers are incorrect:

hot site. Is incorrect because a hot-site is fully configured with all the required hardware. The only thing missing is the last backup and you are up and running.

Rolling hot site. Is incorrect because a rolling hot-site is fully configured with all the required hardware.

cold site. Is incorrect because a cold site has basically power, HVAC, basic cabling, but no or little as far as processing equipment is concerned. All other equipment must be brought to this site. It might take a week or two to reconstruct.

References:
OIG CBK Business Continuity and Disaster Recovery Planning (pages 368 - 369)

QUESTION 489

Which of the following computer recovery sites is the least expensive and the most difficult to test?

A. non-mobile hot site
B. mobile hot site
C. warm site
D. cold site

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Is the least expensive because it is basically a structure with power and would be the most difficult to test because you would have to install all of the hardware infrastructure in order for it to be operational for the test.

The following answers are incorrect:

non-mobile hot site. Is incorrect because it is more expensive then a cold site and easier to test because all of the infrastructure is in place.

mobile hot site. Is incorrect because it is more expensive then a cold site and easier to test because all of the infrastructure is in place.

warm site. Is incorrect because it is more expensive then a cold site and easier to test because more of the infrastructure is in place.

QUESTION 490
Which of the following is the most important consideration in locating an alternate computing facility during the development of a disaster recovery plan?

A. It is unlikely to be affected by the same disaster.
B. It is close enough to become operational quickly.
C. It is close enough to serve its users.
D. It is convenient to airports and hotels.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
You do not want the alternate or recovery site located in close proximity to the original site because the same event that create the situation in the first place might very well impact that site also.

From NIST: "The fixed site should be in a geographic area that is unlikely to be negatively affected by the same disaster event (e.g., weather-related impacts or power grid failure) as the organization's primary site.

The following answers are incorrect:

It is close enough to become operational quickly. Is incorrect because it is not the best answer. You'd want the alternate site to be close but if it is too close the same event could impact that site as well.

It is close enough to serve its users. Is incorrect because it is not the best answer. You'd want the alternate site to be close to users if applicable, but if it is too close the same event could impact that site as well

It is convenient to airports and hotels. Is incorrect because it is not the best answer, it is more important that the same event does not impact the alternate site then convenience.

References:

OIG CBK Business Continuity and Disaster Recovery Planning (pages 368 - 369)
NIST document 800-34 pg 21

QUESTION 491
Contracts and agreements are often times unenforceable or hard to enforce in which of the following alternate facility recovery agreement?

A. hot site
B. warm site
C. cold site
D. reciprocal agreement

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A reciprocal agreement is where two or more organizations mutually agree to provide facilities to the other if a disaster occurs. The organizations must have similiar hardware and software configurations. Reciprocal agreements are often not legally binding.

Reciprocal agreements are not contracts and cannot be enforced. You cannot force someone you have such an agreement with to provide processing to you.

Government regulators do not accept reciprocal agreements as valid disaster recovery sites.

Cold sites are empty computer rooms consisting only of environmental systems, such as air conditioning and raised floors, etc. They do not meet the requirements of most regulators and boards of directors that the disaster plan be tested at least annually.

Time Brokers promise to deliver processing time on other systems. They charge a fee, but cannot guaranty that processing will always be available, especially in areas that experienced multiple disasters.

With the exception of providing your own hot site, commercial hot sites provide the greatest protection. Most will allow you up to six weeks to restore your sites if you declare a disaster. They also permit an annual amount of time to test the Disaster Plan.

References:
OIG CBK Business Continuity and Disaster Recovery Planning (pages 368 - 369)

The following answers are incorrect:
hot site. Is incorrect because you have a contract in place stating what services are to be provided.
warm site. Is incorrect because you have a contract in place stating what services are to be provided.
cold site. Is incorrect because you have a contract in place stating what services are to be provided.

QUESTION 492
Organizations should not view disaster recovery as which of the following?

A. Committed expense.

B. Discretionary expense.
C. Enforcement of legal statutes.
D. Compliance with regulations.

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Disaster Recovery should never be considered a discretionary expense. It is far too important a task. In order to maintain the continuity of the business Disaster Recovery should be a commitment of and by the organization.

A discretionary fixed cost has a short future planning horizon—under a year. These types of costs arise from annual decisions of management to spend in specific fixed cost areas, such as marketing and research. DR would be an ongoing long term committment not a short term effort only.

A committed fixed cost has a long future planning horizon— more than on year. These types of costs relate to a company's investment in assets such as facilities and equipment. Once such costs have been incurred, the company is required to make future payments.

The following answers are incorrect:

committed expense. Is incorrect because Disaster Recovery should be a committed expense.

enforcement of legal statutes. Is incorrect because Disaster Recovery can include enforcement of legal statutes. Many organizations have legal requirements toward Disaster Recovery.

compliance with regulations. Is incorrect because Disaster Recovery often means compliance with regulations. Many financial institutions have regulations requiring Disaster Recovery Plans and Procedures.

QUESTION 493
Which of the following groups represents the leading source of computer crime losses?

A. Hackers
B. Industrial saboteurs
C. Foreign intelligence officers
D. Employees

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
There are some conflicting figures as to which group is a bigger threat hackers or employees. Employees are still considered to the leading source of computer crime losses. Employees often have an easier time gaining access to systems or source code then ousiders or other means of creating computer crimes.

A word of caution is necessary: although the media has tended to portray the threat of cybercrime as existing almost exclusively from the outside, external to a company, reality paints a much different picture. Often the greatest risk of cybercrime comes from the inside, namely, criminal insiders. Information security professionals must be particularly sensitive to the phenomena of the criminal or dangerous insider, as these individuals usually operate under the radar, inside of the primarily outward/external facing security controls, thus significantly increasing the impact of their crimes while leaving few, if any, audit trails to follow and evidence for prosecution.

Some of the large scale crimes committed agains bank lately has shown that Internal Threats are the worst and they are more common that one would think. The definition of what a hacker is can vary greatly from one country to another but in some of the states in the USA a hacker is defined as Someone who is using resources in a way that is not authorized. A recent case in Ohio involved an internal employee who was spending most of his day on dating website looking for the love of his life. The employee was taken to court for hacking the company resources.

The following answers are incorrect:

hackers. Is incorrect because while hackers represent a very large problem and both the frequency of attacks and overall losses have grown hackers are considered to be a small segment of combined computer fraudsters.

industrial saboteurs. Is incorrect because industrial saboteurs tend to go after trade secrets. While the loss to the organization can be great, they still fall short when compared to the losses created by employees. Often it is an employee that was involved in industrial sabotage.

foreign intelligence officers. Is incorrect because the losses tend to be national secrets. You really can't put t cost on this and the number of frequency and occurances of this is less than that of employee related losses.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 22327-22331). Auerbach Publications. Kindle Edition.

QUESTION 494
Which of the following is the best reason for the use of an automated risk analysis tool?

A. Much of the data gathered during the review cannot be reused for subsequent analysis.
B. Automated methodologies require minimal training and knowledge of risk analysis.
C. Most software tools have user interfaces that are easy to use and does not require any training.
D. Information gathering would be minimized and expedited due to the amount of information already built into the tool.

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The use of tools simplifies this process. Not only do they usually have a database of assests, threats, and vulnerabilities but they also speed up the entire process.

Using Automated tools for performing a risk assessment can reduce the time it takes to perform them and can simplify the process as well. The better types of these tools include a well-researched threat population and associated statistics. Using one of these tools virtually ensures that no relevant threat is overlooked, and associated risks are accepted as a consequence of the threat being overlooked.

In most situations, the assessor will turn to the use of a variety of automated tools to assist in the vulnerability assessment process. These tools contain extensive databases of specific known vulnerabilities as well as the ability to analyze system and network configuration information to predict where a particular system might be vulnerable to different types of attacks. There are many different types of tools currently available to address a wide variety of vulnerability assessment needs. Some tools will examine a system from the viewpoint of the network, seeking to determine if a system can be compromised by a remote attacker exploiting available services on a particular host system. These tools will test for open ports listening for connections, known vulnerabilities in common services, and known operating system exploits.

Michael Gregg says:
Automated tools are available that minimize the effort of the manual process. These programs enable users to rerun the analysis with different parameters to answer "what-ifs." They perform calculations quickly and can be used to estimate future expected losses easier than performing the calculations manually.

Shon Harris in her latest book says:
The gathered data can be reused, greatly reducing the time required to perform subsequent analyses. The risk analysis team can also print reports and comprehensive graphs to present to management.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 4655-4661). Auerbach Publications. Kindle Edition.

and
CISSP Exam Cram 2 by Michael Gregg
and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 2333-2335). McGraw-Hill. Kindle Edition.

The following answers are incorrect:

Much of the data gathered during the review cannot be reused for subsequent analysis. Is incorrect because the data can be reused for later analysis.

Automated methodologies require minimal training and knowledge of risk analysis. Is incorrect because it is not the best answer. While a minimal amount of training and knowledge is needed, the analysis should still be performed by skilled professionals.

Most software tools have user interfaces that are easy to use and does not require any training. Is incorrect because it is not the best answer. While many of the user interfaces are easy to use it is better if the tool already has information built into it. There is always a training curve when any product is being used for the first time.

QUESTION 495
A deviation from an organization-wide security policy requires which of the following?

A. Risk Acceptance
B. Risk Assignment
C. Risk Reduction
D. Risk Containment

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A deviation from an organization-wide security policy requires you to manage the risk. If you deviate from the security policy then you are required to accept the risks that might occur.

In some cases, it may be prudent for an organization to simply accept the risk that is presented in certain scenarios. Risk acceptance is the practice of accepting certain risk(s), typically based on a business decision that may also weigh the cost versus the benefit of dealing with the risk in another way.

The OIG defines Risk Management as: This term characterizes the overall process.

The first phase of risk assessment includes identifying risks, risk-reducing measures, and the budgetary impact of implementing decisions related to the acceptance, avoidance, or transfer of risk.

The second phase of risk management includes the process of assigning priority to, budgeting, implementing, and maintaining appropriate risk-reducing measures.

Risk management is a continuous process of ever-increasing complexity. It is how we evaluate the impact of exposures and respond to them. Risk management minimizes loss to information assets due to undesirable events through identification, measurement, and control. It encompasses the overall security review, risk analysis, selection and evaluation of safeguards, cost–benefit analysis, management decision, and safeguard identification and implementation, along with ongoing effectiveness review.

Risk management provides a mechanism to the organization to ensure that executive management knows current risks, and informed decisions can be made to use one of the risk management principles: risk avoidance, risk transfer, risk mitigation, or risk acceptance.

The 4 ways of dealing with risks are: Avoidance, Transfer, Mitigation, Acceptance

The following answers are incorrect:

Risk assignment. Is incorrect because it is a distractor, assignment is not one of the ways to manage risk.

Risk reduction. Is incorrect because there was a deviation of the security policy. You could have some additional exposure by the fact that you deviated from the policy.

Risk containment. Is incorrect because it is a distractor, containment is not one of the ways to manage risk.

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 8882-8886). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 10206-10208). Auerbach Publications. Kindle Edition.

QUESTION 496
Which of the following is biggest factor that makes Computer Crimes possible?

A. The fraudster obtaining advanced training & special knowledge.
B. Victim carelessness.
C. Collusion with others in information processing.
D. System design flaws.

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The biggest factor that makes Computer Crimes possible is Victim Carelessness. Awareness and education can reduce the chance of someone becomming a victim.

The types and frequency of Computer Crimes are increasing at a rapid rate. Computer Crime was once mainly the result of insiders or disgruntled employees. Now just about everybody has access to the internet, professional criminals are taking advantage of this.

Specialized skills are no longer needed and a search on the internet can provide a fraudster with a plethora of tools that can be used to perpetuate fraud.

All too often carelessness leads to someone being a victim. People often use simple passwords or write them down in plain sight where they can be found by fraudsters. People throwing away papers loaded with account numbers, social security numbers, or other types of non-public personal information. There are

phishing e-mail attempts where the fraudster tries to redirect a potential victim to a bogus site that resembles a legitimate site in an attempt to get the users' login ID and password, or other credentials. There is also social engineering. Awareness and training can help reduce the chance of someone becoming a victim.

The following answers are incorrect:

The fraudster obtaining advanced training and special knowledge. Is incorrect because training and special knowledge is not required. There are many tools widely available to fraudsters.

Collusion with others in information processing. Is incorrect because as more and more people use computers in their daily lives, it is no longer necessary to have someone on the inside be a party to fraud attempts.

System design flaws. Is incorrect because while System design flaws are sometimes a factor in Computer Crimes more often then not it is victim carelessness that leads to Computer Crimes.

References:
OIG CBK Legal, Regulations, Compliance and Investigations (pages 695 - 697)

QUESTION 497
Under United States law, an investigator's notebook may be used in court in which of the following scenarios?

A. When the investigator is unwilling to testify.
B. When other forms of physical evidence are not available.
C. To refresh the investigators memory while testifying.
D. If the defense has no objections.

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
An investigator's notebook cannot be used as evidence is court. It can only be used by the investigator to refresh his memory during a proceeding, but cannot be submitted as evidence in any form.

The following answers are incorrect:

When the investigator is unwilling to testify. Is incorrect because the notebook cannot be submitted as evidence in any form.

When other forms of physical evidence are not available. Is incorrect because the notebook cannot be submitted as evidence in any form.

If the defense has no objections. Is incorrect because the notebook cannot be submitted as evidence in any form.

QUESTION 498
In addition to the Legal Department, with what company function must the collection of physical evidence be coordinated if an employee is suspected?

A. Human Resources
B. Industrial Security
C. Public Relations
D. External Audit Group

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
If an employee is suspected of causing an incident, the human resources department may be involved—for example, in assisting with disciplinary proceedings.

Legal Department. The legal experts should review incident response plans, policies, and procedures to ensure their compliance with law and Federal guidance, including the right to privacy. In addition, the guidance of the general counsel or legal department should be sought if there is reason to believe that an incident may have legal ramifications, including evidence collection, prosecution of a suspect, or a lawsuit, or if there may be a need for a memorandum of understanding (MOU) or other binding agreements involving liability limitations for information sharing.

Public Affairs, Public Relations, and Media Relations. Depending on the nature and impact of an incident, a need may exist to inform the media and, by extension, the public.

The Incident response team members could include:

Management
Information Security
Legal / Human Resources
Public Relations
Communications
Physical Security
Network Security
Network and System Administrators
Network and System Security Administrators
Internal Audit

Events versus Incidents

An event is any observable occurrence in a system or network. Events include a user connecting to a file share, a server receiving a request for a web page, a user sending email, and a firewall blocking a connection attempt. Adverse events are events with a negative consequence, such as system crashes, packet floods, unauthorized use of system privileges, unauthorized access to sensitive data, and execution of malware that destroys data. This guide addresses only adverse events that are computer security- related, not those caused by natural disasters, power failures, etc.

A computer security incident is a violation or imminent threat of violation of computer security policies, acceptable use policies, or standard security practices.

Examples of incidents are:
An attacker commands a botnet to send high volumes of connection requests to a web server, causing it to crash.

Users are tricked into opening a “quarterly report” sent via email that is actually malware; running the tool has infected their computers and established connections with an external host.

An attacker obtains sensitive data and threatens that the details will be released publicly if the organization does not pay a designated sum of money.

A user provides or exposes sensitive information to others through peer-to-peer file sharing services.

The following answers are incorrect:

Industrial Security. Is incorrect because it is not the best answer, the human resource department must be involved with the collection of physical evidence if an employee is suspected.

public relations. Is incorrect because it is not the best answer. It would be an important element to minimize public image damage but not the best choice for this question.

External Audit Group. Is incorrect because it is not the best answer, the human resource department must be involved with the collection of physical evidence if an employee is suspected.

Reference(s) used for this question:
NIST Special Publication 800-61

QUESTION 499
To be admissible in court, computer evidence must be which of the following?

A. Relevant
B. Decrypted
C. Edited
D. Incriminating

Correct Answer: A
Section: Risk, Response and Recovery
Explanation
Explanation/Reference:
Before any evidence can be admissible in court, the evidence has to be relevant, material to the issue, and it must be presented in compliance with the rules of evidence. This holds true for computer evidence as well.

While there are no absolute means to ensure that evidence will be allowed and helpful in a court of law, information security professionals should understand the basic rules of evidence. Evidence should be relevant, authentic, accurate, complete, and convincing. Evidence gathering should emphasize these criteria.

As stated in CISSP for Dummies:

Because computer-generated evidence can sometimes be easily manipulated, altered , or tampered with, and because it's not easily and commonly understood, this type of evidence is usually considered suspect in a court of law. In order to be admissible, evidence must be

Relevant: It must tend to prove or disprove facts that are relevant and material to the case.

Reliable: It must be reasonably proven that what is presented as evidence is what was originally collected and that the evidence itself is reliable. This is accomplished, in part, through proper evidence handling and the chain of custody. (We discuss this in the upcoming section "Chain of custody and the evidence life cycle.")

Legally permissible: It must be obtained through legal means. Evidence that's not legally permissible may include evidence obtained through the following means:

Illegal search and seizure: Law enforcement personnel must obtain a prior court order; however, non-law enforcement personnel, such as a supervisor or system administrator, may be able to conduct an authorized search under some circumstances.

Illegal wiretaps or phone taps: Anyone conducting wiretaps or phone taps must obtain a prior court order.

Entrapment or enticement: Entrapment encourages someone to commit a crime that the individual may have had no intention of committing. Conversely, enticement lures someone toward certain evidence (a honey pot, if you will) after that individual has already committed a crime. Enticement is not necessarily illegal but does raise certain ethical arguments and may not be admissible in court.

Coercion: Coerced testimony or confessions are not legally permissible.

Unauthorized or improper monitoring: Active monitoring must be properly authorized and conducted in a standard manner; users must be notified that they may be subject to monitoring. The following answers are incorrect:

decrypted. Is incorrect because evidence has to be relevant, material to the issue, and it must be presented in compliance with the rules of evidence.

edited. Is incorrect because evidence has to be relevant, material to the issue, and it must be presented in compliance with the rules of evidence. Edited evidence violates the rules of evidence.

incriminating. Is incorrect because evidence has to be relevant, material to the issue, and it must be presented in compliance with the rules of evidence.

Reference(s) used for this question:

CISSP STudy Guide (Conrad, Misenar, Feldman) Elsevier. 2012. Page 423

and
Mc Graw Hill, Shon Harris CISSP All In One (AIO), 6th Edition , Pages 1051-1056
and
CISSP for Dummies , Peter Gregory

QUESTION 500
The typical computer fraudsters are usually persons with which of the following characteristics?

A. They have had previous contact with law enforcement
B. They conspire with others
C. They hold a position of trust
D. They deviate from the accepted norms of society

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
These people, as employees, are trusted to perform their duties honestly and not take advantage of the trust placed in them.

The following answers are incorrect:

They have had previous contact with law enforcement. Is incorrect because most often it is a person that holds a position of trust and this answer implies they have a criminal background. This type of individual is typically not in a position of trust within an organization.

They conspire with others. Is incorrect because they typically work alone, often as a form of retribution over a percieved injustice done to them.

They deviate from the accepted norms of society. Is incorrect because while the nature of fraudsters deviate from the norm, the fraudsters often hold a position of trust within the organization.

QUESTION 501

Once evidence is seized, a law enforcement officer should emphasize which of the following?

A. Chain of command

B. Chain of custody
C. Chain of control
D. Chain of communications

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
All people that handle the evidence from the time the crime was committed through the final disposition must be identified. This is to ensure that the evidence can be used and has not been tampered with.

The following answers are incorrect:

chain of command. Is incorrect because chain of command is the order of authority and does not apply to evidence.

chain of control. Is incorrect because it is a distractor. chain of communications. Is incorrect because it is a distractor.

QUESTION 502
Which of the following cannot be undertaken in conjunction or while computer incident handling is ongoing?

A. System development activity
B. Help-desk function
C. System Imaging
D. Risk management process

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
If Incident Handling is underway an incident has potentially been identified. At that point all use of the system should stop because the system can no longer be trusted and any changes could contaminate the evidence. This would include all System Development Activity.

Every organization should have plans and procedures in place that deals with Incident Handling.

Employees should be instructed what steps are to be taken as soon as an incident occurs and how to report it. It is important that all parties involved are aware of these steps to protect not only any possible evidence but also to prevent any additional harm.

It is quite possible that the fraudster has planted malicous code that could cause destruction or even a Trojan Horse with a back door into the system. As soon as an incident has been identified the system can no longer be trusted and all use of the system should cease.

Shon Harris in her latest book mentions:
Although we commonly use the terms “event” and “incident” interchangeably, there are subtle differences between the two. An event is a negative occurrence that can be observed, verified, and documented, whereas an incident is a series of events that negatively affects the company and/ or impacts its security posture. This is why we call reacting to these issues “incident response” (or “incident handling”), because something is negatively affecting the company and causing a security breach.

Many types of incidents (virus, insider attack, terrorist attacks, and so on) exist, and sometimes it is just human error. Indeed, many incident response individuals have received a frantic call in the middle of the night because a system is acting “weird.” The reasons could be that a deployed patch broke something, someone misconfigured a device, or the administrator just learned a new scripting language and rolled out some code that caused mayhem and confusion.

When a company endures a computer crime, it should leave the environment and evidence unaltered and contact whomever has been delegated to investigate these types of situations. Someone who is unfamiliar with the proper process of collecting data and evidence from a crime scene could instead destroy that evidence, and thus all hope of prosecuting individuals, and achieving a conviction would be lost.

Companies should have procedures for many issues in computer security such as enforcement procedures, disaster recovery and continuity procedures, and backup procedures. It is also necessary to have a procedure for dealing with computer incidents because they have become an increasingly important issue of today’s information security departments. This is a direct result of attacks against networks and information systems increasing annually. Even though we don’t have specific numbers due to a lack of universal reporting and reporting in general, it is clear that the volume of attacks is increasing.

Just think about all the spam, phishing scams, malware, distributed denial-of-service, and other attacks you see on your own network and hear about in the news. Unfortunately, many companies are at a loss as to who to call or what to do right after they have been the victim of a cybercrime. Therefore, all companies should have an incident response policy that indicates who has the authority to initiate an incident response, with supporting procedures set up before an incident takes place.

This policy should be managed by the legal department and security department. They need to work together to make sure the technical security issues are covered and the legal issues that surround criminal activities are properly dealt with. The incident response policy should be clear and concise. For example, it should indicate if systems can be taken offline to try to save evidence or if systems have to continue functioning at the risk of destroying evidence. Each system and functionality should have a priority assigned to it. For instance, if the file server is infected, it should be removed from the network, but not shut down. However, if the mail server is infected, it should not be removed from the network or shut down because of the priority the company attributes to the mail server over the file server. Tradeoffs and decisions will have to be made, but it is better to think through these issues before the situation occurs, because better logic is usually possible before a crisis, when there’s less emotion and chaos.

The Australian Computer Emergency Response Team's General Guidelines for Computer Forensics:

Keep the handling and corruption of original data to a minimum.
Document all actions and explain changes.
Follow the Five Rules for Evidence (Admissible, Authentic, Complete, Accurate, Convincing).
• Bring in more experienced help when handling and/ or analyzing the evidence is beyond your knowledge, skills, or abilities.
Adhere to your organization's security policy and obtain written permission to conduct a forensics investigation.

Capture as accurate an image of the system(s) as possible while working quickly.
Be ready to testify in a court of law.
Make certain your actions are repeatable.
Prioritize your actions, beginning with volatile and proceeding to persistent evidence.
Do not run any programs on the system(s) that are potential evidence.
Act ethically and in good faith while conducting a forensics investigation, and do not attempt to do any harm.

The following answers are incorrect:

help-desk function. Is incorrect because during an incident, employees need to be able to communicate with a central source. It is most likely that would be the help-desk. Also the help-desk would need to be able to communicate with the employees to keep them informed.

system imaging. Is incorrect because once an incident has occured you should perform a capture of evidence starting with the most volatile data and imaging would be doen using bit for bit copy of storage medias to protect the evidence.

risk management process. Is incorrect because incident handling is part of risk management, and should continue.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 21468-21476). McGraw-Hill. Kindle Edition.
and
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Locations 21096-21121). McGraw-Hill. Kindle Edition.
and
NIST Computer Security incident handling http://csrc.nist.gov/publications/nistpubs/800-12/800-12-html/chapter12.html

QUESTION 503
Devices that supply power when the commercial utility power system fails are called which of the following?

A. power conditioners
B. uninterruptible power supplies
C. power filters
D. power dividers

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
From Shon Harris AIO Fifth Edition:

Protecting power can be done in three ways: through UPSs, power line conditioners, and backup sources.

UPSs use battery packs that range in size and capacity. A UPS can be online or standby.

Online UPS systems use AC line voltage to charge a bank of batteries. When in use, the UPS has an inverter that changes the DC output from the batteries into the required AC form and that regulates the voltage as it powers computer devices.

Online UPS systems have the normal primary power passing through them day in and day out. They constantly provide power from their own inverters, even when the electric power is in proper use. Since the environment's electricity passes through this type of UPS all the time, the UPS device is able to quickly detect when a power failure takes place. An online UPS can provide the necessary electricity and picks up the load after a power failure much more quickly than a standby UPS.

Standby UPS devices stay inactive until a power line fails. The system has sensors that detect a power failure, and the load is switched to the battery pack. The switch to the battery pack is what causes the small delay in electricity being provided.
So an online UPS picks up the load much more quickly than a standby UPS, but costs more of course.

QUESTION 504
Within the realm of IT security, which of the following combinations best defines risk?

A. Threat coupled with a breach
B. Threat coupled with a vulnerability
C. Vulnerability coupled with an attack
D. Threat coupled with a breach of security

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Answer: Threat coupled with a vulnerability. Threats are circumstances or actions with the ability to harm a system. They can destroy or modify data or result an a DoS. Threats by themselves are not acted upon unless there is a vulnerability that can be taken advantage of. Risk enters the equation when a vulnerability (Flaw or weakness) exists in policies, procedures, personnel management, hardware, software or facilities and can be exploited by a threat agent. Vulnerabilities do not cause harm, but they leave the system open to harm. The combination of a threat with a vulnerability increases the risk to the system of an intrusion.

The following answers are incorrect:

Threat coupled with a breach. A threat is the potential that a particular threat-source will take advantage of a vulnerability. Breaches get around security. It does not matter if a breach is discovered or not, it has still occured and is not a risk of something occuring. A breach would quite often be termed as an incident or intrusion.

Vulnerability coupled with an attack. Vulnerabilities are weaknesses (flaws) in policies, procedures, personnel management, hardware, software or factilities that may result in a harmful intrusion to an IT system. An attack takes advantage of the flaw or vulnerability. Attacks are explicit attempts to violate security, and are more than risk as they are active.

Threat coupled with a breach of security. This is a detractor. Although a threat agent may take advantage of (Breach) vulnerabilities or flaws in systems security. A threat coupled with a breach of security is more than a risk as this is active.

The following reference(s) may be used to research the Qs in this question:

ISC2 OIG, 2007 p. 66-67
Shon Harris AIO v3 p. 71-72

QUESTION 505
Which of the following backup sites is the most effective for disaster recovery?

A. Time brokers
B. Hot sites
C. Cold sites
D. Reciprocal Agreement

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A hot site has the equipment, software and communications capabilities to facilitate a recovery within a few minutes or hours following the notification of a disaster to the organization's primary site. With the exception of providing your own hot site, commercial hot sites provide the greatest protection. Most will allow you up to six weeks to restore your sites if you declare a disaster. They also permit an annual amount of time to test the Disaster Plan.

The following answers are incorrect:

Cold sites. Cold sites are empty computer rooms consisting only of environmental systems, such as air conditioning and raised floors, etc. They do not meet the requirements of most regulators and boards of directors that the disaster plan be tested at least annually.

Reciprocal Agreement. Reciprocal agreements are not contracts and cannot be enforced. You cannot force someone you have such an agreement with to provide processing to you. Government regulators do not accept reciprocal agreements as valid disaster recovery backup sites.

Time Brokers. Time Brokers promise to deliver processing time on other systems. They charge a fee, but cannot guaranty that processing will always be available, especially in areas that experienced multiple disasters.

The following reference(s) were/was used to create this question:
ISC2 OIG, 2007 p368
Shon Harris AIO v3. p.710

QUESTION 506
Which of the following is NOT a transaction redundancy implementation?

A. on-site mirroring
B. Electronic Vaulting
C. Remote Journaling
D. Database Shadowing

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Three concepts are used to create a level of fault tolerance and redundancy in transaction processing.

They are Electronic vaulting, remote journaling and database shadowing provide redundancy at the transaction level.

Electronic vaulting is accomplished by backing up system data over a network. The backup location is usually at a separate geographical location known as the vault site. Vaulting can be used as a mirror or a backup mechanism using the standard incremental or differential backup cycle. Changes to the host system are sent to the vault server in real-time when the backup method is implemented as a mirror. If vaulting updates are recorded in real-time, then it will be necessary to perform regular backups at the off-site location to provide recovery services due to inadvertent or malicious alterations to user or system data.

Journaling or Remote Journaling is another technique used by database management systems to provide redundancy for their transactions. When a transaction is completed, the database management system duplicates the journal entry at a remote location. The journal provides sufficient detail for the transaction to be replayed on the remote system. This provides for database recovery in the event that the database becomes corrupted or unavailable.

There are also additional redundancy options available within application and database software platforms. For example, database shadowing may be used where a database management system updates records in multiple locations. This technique updates an entire copy of the database at a remote location.

Reference used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 20403-20407). Auerbach Publications. Kindle Edition. and
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 20375-20377). Auerbach Publications. Kindle Edition.

QUESTION 507
Which of the following steps is NOT one of the eight detailed steps of a Business Impact Assessment (BIA):

A. Notifying senior management of the start of the assessment.

B. Creating data gathering techniques.
C. Identifying critical business functions.
D. Calculating the risk for each different business function.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Source: HARRIS, S., CISSP All- In-One Exam Guide, 3rd. Edition, 2005, Chapter 9, Page 701.

There have been much discussion about the steps of the BIA and I struggled with this before deciding to scrape the question about "the four steps," and re-write the question using the AIO for a reference. This question should be easy.... if you know all eight steps.

The eight detailed and granular steps of the BIA are:

1. Select Individuals to interview for the data gathering.
2. Create data gathering techniques (surveys, questionnaires, qualitative and quantitative approaches).
3. Identify the company's critical business functions.
4. Identify the resources that these functions depend upon.
5. Calculate how long these functions can survive without these resources.
6. Identify vulnerabilities and the threats to these functions.
7. Calculate risk for each of the different business functions.
8. Document findings and report them to management.

Shon goes on to cover each step in Chapter 9.

QUESTION 508
Which of the following results in the most devastating business interruptions?

A. Loss of Hardware/Software
B. Loss of Data
C. Loss of Communication Links
D. Loss of Applications

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Source: Veritas eLearning CD - Introducing Disaster Recovery Planning, Chapter 1.
All of the others can be replaced or repaired. Data that is lost and was not backed up, cannot be restored.

QUESTION 509
Which of the following is the most critical item from a disaster recovery point of view?

A. Data
B. Hardware/Software
C. Communication LinksD. Software Applications

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The most important point is ALWAYS the data. Everything else can be replaced or repaired.

Data MUST be backed up, backups must be regularly tested, because once it is truly lost, it is lost forever.

The goal of disaster recovery is to minimize the effects of a disaster or disruption. It means taking the necessary steps to ensure that the resources, personnel, and business processes are able to resume operation in a timely manner . This is different from continuity planning, which provides methods and procedures for dealing with longer-term outages and disasters.

The goal of a disaster recovery plan is to handle the disaster and its ramifications right after the disaster hits; the disaster recovery plan is usually very information technology (IT)– focused. A disaster recovery plan (DRP) is carried out when everything is still in emergency mode, and everyone is scrambling to get all critical systems back online.

Reference(s) used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 887). McGraw-Hill. Kindle Edition.
and
Veritas eLearning CD - Introducing Disaster Recovery Planning, Chapter 1.

QUESTION 510
Which of the following is defined as the most recent point in time to which data must be synchronized without adversely affecting the organization (financial or operational impacts)?

A. Recovery Point Objective
B. Recovery Time Objective
C. Point of Time Objective
D. Critical Time Objective

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The recovery point objective (RPO) is the maximum acceptable level of data loss following an unplanned “event”, like a disaster (natural or man-made), act of crime or terrorism, or any other business or technical disruption that could cause such data loss. The RPO represents the point in time, prior to such an event or incident, to which lost data can be recovered (given the most recent backup copy of the data).

The recovery time objective (RTO) is a period of time within which business and / or technology capabilities must be restored following an unplanned event or disaster. The RTO is a function of the extent to which the interruption disrupts normal operations and the amount of revenue lost per unit of time as a result of the disaster.

These factors in turn depend on the affected equipment and application(s). Both of these numbers represent key targets that are set by key businesses during business continuity and disaster recovery planning; these targets in turn drive the technology and implementation choices for business resumption services, backup / recovery / archival services, and recovery facilities and procedures.

Many organizations put the cart before the horse in selecting and deploying technologies before understanding the business needs as expressed in RPO and RTO; IT departments later bear the brunt of user complaints that their service expectations are not being met. Defining the RPO and RTO can avoid that pitfall, and in doing so can also make for a compelling business case for recovery technology spending and staffing.

For the CISSP candidate studying for the exam, there are no such objectives for "point of time," and "critical time." Those two answers are simply detracters.

Reference:
http://www.wikibon.org/Recovery_point_objective_/_recovery_time_objective_strategy

QUESTION 511
Valuable paper insurance coverage does not cover damage to which of the following?

A. Inscribed, printed and Written documents
B. Manuscripts
C. Records
D. Money and Securities

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
All businesses are driven by records. Even in today's electronic society businesses generate mountains of critical documents everyday. Invoices, client lists, calendars, contracts, files, medical records, and innumerable other records are generated every day.

Stop and ask yourself what happens if your business lost those documents today.

Valuable papers business insurance coverage provides coverage to your business in case of a loss of vital records. Over the years policy language has evolved to include a number of different types of records. Generally, the policy will cover "written, printed, or otherwise inscribed documents and records, including books, maps, films, drawings, abstracts, deeds, mortgages, and manuscripts." But, read the policy coverage carefully. The policy language typically "does not mean "money" or "securities," converted data,programs or instructions used in your data processing operations, including the materials on which the data is recorded."

The coverage is often included as a part of property insurance or as part of a small business owner policy. For example, a small business owner policy includes in many cases valuable papers coverage up to $25,000.

It is important to realize what the coverage actually entails and, even more critical, to analyze your business to determine what it would cost to replace records.

The coverage pays for the loss of vital papers and the cost to replace the records up to the limit of the insurance and after application of any deductible. For example, the insurer will pay to have waterlogged papers dried and reproduced (remember, fires are put out by water and the fire department does not stop to remove your book keeping records). The insurer may cover temporary storage or the cost of moving records to avoid a loss.

For some businesses, losing customer lists, some business records, and contracts, can mean the expense and trouble of having to recreate those documents, but is relatively easy and a low level risk and loss. Larger businesses and especially professionals (lawyers, accountants, doctors) are in an entirely separate category and the cost of replacement of documents is much higher. Consider, in analyzing your business and potential risk, what it would actually cost to reproduce your critical business records. Would you need to hire temporary personnel? How many hours of productivity would go into replacing the records? Would you need to obtain originals? Would original work need to be recreated (for example, home inspectors, surveyors, cartographers)?

Often when a business owner considers the actual cost related to the reproduction of records, the owner quickly realizes that their business insurance policy limits for valuable papers coverage is woefully inadequate.
Insurers (and your insurance professional)will often suggest higher coverages for valuable papers. The extra premium is often worth the cost and should be considered.

Finally, most policies will require records to be protected. You need to review your declarations pages and speak with your insurer to determine what is required. Some insurers may offer discounted coverage if there is a document retention and back up plan in place and followed. There are professional organizations that can assist your business in designing a records management policy to lower the risk (and your premiums). For example, ARMA International has been around since 1955 and its members consist of some of the top document retention and storage companies.

Reference(s) used for this question:
http://businessinsure.about.com/od/propertyinsurance/f/vpcov.htm

QUESTION 512
Which of the following is covered under Crime Insurance Policy Coverage?

A. Inscribed, printed and Written documents

B. Manuscripts
C. Accounts Receivable
D. Money and Securities

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Source: TIPTON, Harold F. & KRAUSE, MICKI, Information Security Management Handbook, 4th Edition, Volume 1, Property Insurance overview, Page 589.

QUESTION 513
If your property Insurance has Actual Cash Valuation (ACV) clause, your damaged property will be compensated based on:

A. Value of item on the date of loss
B. Replacement with a new item for the old one regardless of condition of lost item
C. Value of item one month before the loss
D. Value of item on the date of loss plus 10 percent

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
This is called the Actual Cash Value (ACV) or Actual Cost Valuation (ACV)

All of the other answers were only detractors. Below you have an explanation of the different types of valuation you could use. It is VERY important for you to validate with your insurer which one applies to you as you could have some very surprising finding the day you have a disaster that takes place.

Replacement Cost
Property replacement cost insurance promises to replace old with new. Generally, replacement of a building must be done on the same premises and used for the same purpose, using materials comparable to the quality of the materials in the damaged or destroyed property.

There are some other limitations to this promise. For example, the cost of repairs or replacement for buildings doesn't include the increased cost associated with building codes or other laws controlling how buildings must be built today. An endorsement adding coverage for the operation of Building Codes and the increased costs associated with complying with them is available separately — usually for additional premium. In addition, some insurance underwriters will only cover certain property on a depreciated value (actual cash value — ACV) basis even when attached to the building. This includes awnings and floor coverings, appliances for refrigerating, ventilating, cooking, dishwashing, and laundering. Depreciated value also applies to outdoor equipment or furniture.

Actual Cash Value (ACV)
The ACV is the default valuation clause for commercial property insurance. It is also known as depreciated value, but this is not the same as accounting depreciated value. The actual cash value is determined by first calculating the replacement value of the property. The next step involves estimating the amount to be subtracted, which reflects the building's age, wear, and tear.

This amount deducted from the replacement value is known as depreciation. The amount of depreciation is reduced by inflation (increased cost of replacing the property); regular maintenance; and repair (new roofs, new electrical systems, etc.) because these factors reduce the effective age of the buildings.

The amount of depreciation applicable is somewhat subjective and certainly subject to negotiation. In fact, there is often disagreement and a degree of uncertainty over the amount of depreciation applicable to a particular building.

Given this reality, property owners should not leave the determination of depreciation to chance or wait until suffering a property loss to be concerned about it. Every three to five years, property owners should obtain a professional appraisal of the replacement value and depreciated value of the buildings.

The ACV valuation is an option for directors to consider when certain buildings are in need of repair, or budget constraints prevent insuring all of your facilities on a replacement cost basis. There are other valuation options for property owners to consider as well.

Functional Replacement Cost
This valuation method has been available for some time but has not been widely used. It is beginning to show up on property insurance policies imposed by underwriters with concerns about older, buildings. It can also be used for buildings, which are functionally obsolete.

This method provides for the replacement of a building with similar property that performs the same function, using less costly material. The endorsement includes coverage for building codes automatically.

In the event of a loss, the insurance company pays the smallest of four payment options.

1. In the event of a total loss, the insurer could pay the limit of insurance on the building or the cost to replace the building on the same (or different) site with a payment that is “functionally equivalent.”

2. In the event of a partial loss, the insurance company could pay the cost to repair or replace the damaged portion in the same architectural style with less costly material (if available).

3. The insurance company could also pay the amount actually spent to demolish the undamaged portion of the building and clear the site if necessary.

4. The fourth payment option is to pay the amount actually spent to repair, or replace the building using less costly materials, if available (Hillman and McCracken 1997).

Unlike the replacement cost valuation method, which excluded certain fixtures and personal property used to service the premises, this endorsement provides functional replacement cost coverage for these items (awnings, floor coverings, appliances, etc.) (Hillman nd McCracken 1997).

As in the standard replacement cost value option, the insured can elect not to repair or replace the property. Under these circumstances the company pays the smallest of the following:

1. The Limit of Liability

2. The “market value” (not including the value of the land) at the time of the loss. The endorsement defines “market value” as the price which the property might be expected to realize if ffered for sale in fair market.”

3. A modified form of ACV (the amount to repair or replace on he same site with less costly material and in the same architectural tyle, less depreciation) (Hillman and McCracken 1997).

Agreed Value or Agreed Amount
Agreed value or agreed amount is not a valuation method. Instead, his term refers to a waiver of the coinsurance clause in the property insurance policy. Availability of this coverage feature varies among insurers but, it is usually available only when the underwriter has proof (an independent appraisal, or compliance with an insurance company valuation model) of the value of your property. When do I get paid?

Generally, the insurance company will not pay a replacement cost settlement until the property that was damaged or destroyed is actually repaired or replaced as soon as reasonably possible after the loss.

Under no circumstances will the insurance company pay more than your limit of insurance or more than the actual amount you spend to repair or replace the damaged property if this amount is less than the limit of insurance.

Replacement cost insurance terms give the insured the option of settling the loss on an ACV basis. This option may be exercised if you don't plan to replace the building or if you are faced with a significant coinsurance penalty on a replacement cost settlement.

References:
http://www.schirickinsurance.com/resources/value2005.pdf
and
TIPTON, Harold F. & KRAUSE, MICKI
Information Security Management Handbook, 4th Edition, Volume 1
Property Insurance overview, Page 587.

QUESTION 514
If your property Insurance has Replacement Cost Valuation (RCV) clause your damaged property will be compensated:

A. Based on the value of item on the date of loss
B. Based on new, comparable, or identical item for old regardless of condition of lost item
C. Based on value of item one month before the loss
D. Based on the value listed on the Ebay auction web site

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
RCV is the maximum amount your insurance company will pay you for damage to covered property before deducting for depreciation. The RCV payment is based on the current cost to replace your property with new, identical or comparable property.

The other choices were detractor:

Application and definition of the insurance terms Replacement Cost Value (RCV), Actual Cash Value (ACV) and depreciation can be confusing. It's important that you understand the terms to help settle your claim fairly.

An easy way to understand RCV and ACV is to think in terms of "new" and "used."
Replacement cost is the item's current price, new. "What will it cost when I replace it?"
Actual cash is the item's used price, old. "How much money is it worth since I used it for five years?"

Hold Back
Most policies only pay the Actual Cash Value upfront, and then they pay you the "held back" depreciation after you incur the expense to repair or replace your personal property items.

NOTE: You must remember to send documentation to the insurance company proving you've incurred the additional expense you will be reimbursed.

Actual Cash Value (ACV)
ACV is the amount your insurance company will pay you for damage to covered property after deducting for depreciation. ACV is the replacement cost of a new item, minus depreciation. If stated as a simple equation, ACV could be defined as follows: ACV=RCV-Depreciation

Unfortunately, ACV is not always as easy to agree upon as a simple math equation. The ACV can also be calculated as the price a willing buyer would pay for your used item.

Depreciation
Depreciation (sometimes called "hold back") is defined as the "loss in value from all causes, including age, and wear and tear." Although the definition seems to be clear, in our experience, value" as a real-world application is clearly subjective and varies widely. We have seen the same adjuster apply NO depreciation (100 percent value) on one claim and 40 percent depreciation almost half value) on an almost identical claim.

This shows that the process of applying depreciation is subjective and clearly negotiable.

Excessive Depreciation
When the insurance company depreciates more than they should, it is called "Excessive depreciation." Although not ethical, it is very common. Note any items that have excessive depreciation and write a letter to your insurance company.

References:

http://carehelp.org/downloads/category/1-insurance-handouts.html?download=17%3Ahandout08-rcv-and-acv
and
http://www.schirickinsurance.com/resources/value2005.pdf
and
TIPTON, Harold F. & KRAUSE, MICKI, information Security Management Handbook, 4th Edition, Volume 1
Property Insurance overview, Page 587.

QUESTION 515
A momentary power outage is a:

A. spike
B. blackout
C. surge
D. fault

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A momentary power outage is a fault.

Power Excess
Spike --> Too much voltage for a short period of time.
Surge --> Too much voltage for a long period of time.

Power Loss
Fault --> A momentary power outage.
Blackout --> A long power interruption.

Power Degradation
Sag or Dip --> A momentary low voltage.
Brownout --> A prolonged power supply that is below normal voltage.

Reference(s) used for this question:
HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 3rd. Edition McGraw-Hill/Osborne, 2005, page 368.
and
https://en.wikipedia.org/wiki/Power_quality

QUESTION 516
A momentary high voltage is a:

A. spike
B. blackout
C. surge

D. fault

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Too much voltage for a short period of time is a spike.

Too much voltage for a long period of time is a surge.

Not enough voltage for a short period of time is a sag or dip

Not enough voltage for a long period of time is brownout

A short power interruption is a fault

A long power interruption is a blackout

You MUST know all of the power issues above for the purpose of the exam.
From: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 3rd. Edition McGraw-Hill/Osborne, 2005, page 368.

QUESTION 517
A momentary low voltage, from 1 cycle to a few seconds, is a:

A. spike
B. blackout
C. sag
D. fault

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A momentary low voltage is a sag. A synonym would be a dip.

Risks to electrical power supply:

POWER FAILURE

Blackout: complete loss of electrical power
Fault: momentary power outage

POWER DEGRADATION

Brownout: an intentional reduction of voltage by the power company.
Sag/dip: a short period of low voltage

POWER EXCESS

Surge: Prolonged rise in voltage
Spike: Momentary High Voltage
In-rush current: the initial surge of current required by a load before it reaches normal operation.

– Transient: line noise or disturbance is superimposed on the supply circuit and can cause fluctuations in electrical power

Refence(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (p. 462). McGraw-Hill. Kindle Edition.

QUESTION 518
A prolonged high voltage is a:

A. spike
B. blackout
C. surge
D. fault

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A prolonged high voltage is a surge.
From: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 3rd. Edition McGraw-Hill/Osborne, 2005, page 368.

QUESTION 519
A prolonged complete loss of electric power is a:

A. brownout

B. blackout
C. surge
D. fault

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A prolonged power outage is a blackout.
From: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 3rd. Edition McGraw-Hill/Osborne, 2005, page 368.

QUESTION 520
A prolonged power supply that is below normal voltage is a:

A. brownout
B. blackout
C. surge
D. fault

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A prolonged power supply that is below normal voltage is a brownout.
From: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, 3rd. Edition McGraw-Hill/Osborne, 2005, page 368.

QUESTION 521
Because ordinary cable introduces a toxic hazard in the event of fire, special cabling is required in a separate area provided for air circulation for heating, ventilation, and air-conditioning (sometimes referred to as HVAC) and typically provided in the space between the structural ceiling and a drop-down ceiling. This area is referred to as the:

A. smoke boundry area
B. fire detection area
C. Plenum area
D. Intergen area

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
In building construction, a plenum (pronounced PLEH-nuhm, from Latin meaning full) is a separate space provided for air circulation for heating, ventilation, and air-conditioning (sometimes referred to as HVAC) and typically provided in the space between the structural ceiling and a drop-down ceiling. A plenum may also be under a raised floor. In buildings with computer installations, the plenum space is often used to house connecting communication cables. Because ordinary cable introduces a toxic hazard in the event of fire, special plenum cabling is required in plenum areas. Source: http://searchdatacenter.techtarget.com/sDefinition/0,,sid80_gci213716,00.html

QUESTION 522
What is the Maximum Tolerable Downtime (MTD)?

A. Maximum elapsed time required to complete recovery of application data
B. Minimum elapsed time required to complete recovery of application data
C. Maximum elapsed time required to move back to primary site after a major disruption
D. It is maximum delay businesses can tolerate and still remain viable

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Maximum Tolerable Downtime (MTD) is the maximum length of time a BUSINESS FUNCTION can endure without being restored, beyond which the BUSINESS is no longer viable

NIST SAYS:
The ISCP Coordinator should analyze the supported mission/business processes and with the process owners, leadership and business managers determine the acceptable downtime if a given process or specific system data were disrupted or otherwise unavailable. Downtime can be identified in several ways.

Maximum Tolerable Downtime (MTD). The MTD represents the total amount of time the system owner/authorizing official is willing to accept for a mission/business process outage or disruption and includes all impact considerations. Determining MTD is important because it could leave contingency planners with imprecise direction on selection of an appropriate recovery method, and the depth of detail which will be required when developing recovery procedures, including their scope and content.

Other BCP and DRP terms you must be familiar with are:

Recovery Time Objective (RTO). RTO defines the maximum amount of time that a system resource can remain unavailable before there is an unacceptable impact on other system resources, supported mission/business processes, and the MTD. Determining the information system resource RTO is important for selecting appropriate technologies that are best suited for meeting the MTD. When it is not feasible to immediately meet the RTO and the MTD is inflexible, a Plan of Action and Milestone should be initiated to document the situation and plan for its mitigation.

Recovery Point Objective (RPO). The RPO represents the point in time, prior to a disruption or system outage, to which mission/business process data can be recovered (given the most recent backup copy of the data) after an outage. Unlike RTO, RPO is not considered as part of MTD. Rather, it is a factor of how much data loss the mission/business process can tolerate during the recovery process. Because the RTO must ensure that the MTD is not exceeded, the RTO must normally be shorter than the MTD. For example, a system outage may prevent a particular process from being completed, and because it takes time to reprocess the data, that additional processing time must be added to the RTO to stay within the time limit established by the MTD.

References used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 276.
and
http://csrc.nist.gov/publications/nistpubs/800-34-rev1/sp800-34-rev1_errata-Nov11-2010.pdf

QUESTION 523
Out of the steps listed below, which one is not one of the steps conducted during the Business Impact Analysis (BIA)?

A. Alternate site selection
B. Create data-gathering techniques
C. Identify the company's critical business functions
D. Select individuals to interview for data gathering

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Selecting and Alternate Site would not be done within the initial BIA. It would be done at a later stage of the BCP and DRP recovery effort. All of the other choices were steps that would be conducted during the BIA. See below the list of steps that would be done during the BIA.

A BIA (business impact analysis) is considered a functional analysis, in which a team collects data through interviews and documentary sources; documents business functions, activities, and transactions ; develops a hierarchy of business functions; and finally applies a classification scheme to indicate each individual function's criticality level.

BIA Steps
1. Select individuals to interview for data gathering.
2. Create data-gathering techniques (surveys, questionnaires, qualitative and quantitative approaches).

3. Identify the company's critical business functions.
4. Identify the resources these functions depend upon.
5. Calculate how long these functions can survive without these resources.

6. Identify vulnerabilities and threats to these functions.
7. Calculate the risk for each different business function.
8. Document findings and report them to management.

Reference(s) used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 905-909). McGraw-Hill. Kindle Edition.

QUESTION 524
Which one of the following is NOT one of the outcomes of a vulnerability assessment?

A. Quantative loss assessment
B. Qualitative loss assessment
C. Formal approval of BCP scope and initiation document
D. Defining critical support areas

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
When seeking to determine the security position of an organization, the security professional will eventually turn to a vulnerability assessment to help identify specific areas of weakness that need to be addressed. A vulnerability assessment is the use of various tools and analysis methodologies to determine where a particular system or process may be susceptible to attack or misuse. Most vulnerability assessments concentrate on technical vulnerabilities in systems or applications, but the assessment process is equally as effective when examining physical or administrative business processes.

The vulnerability assessment is often part of a BIA. It is similar to a Risk Assessment in that there is a quantitative (financial) section and a qualitative (operational) section. It differs in that i t is smaller than a full risk assessment and is focused on providing information that is used solely for the business continuity plan or disaster recovery plan.

A function of a vulnerability assessment is to conduct a loss impact analysis. Because there will be two parts to the assessment, a financial assessment and an operational assessment, it will be necessary to define loss criteria both quantitatively and qualitatively.

Quantitative loss criteria may be defined as follows:

Incurring financial losses from loss of revenue, capital expenditure, or personal liability resolution
The additional operational expenses incurred due to the disruptive event
Incurring financial loss from resolution of violation of contract agreements
Incurring financial loss from resolution of violation of regulatory or compliance requirements

Qualitative loss criteria may consist of the following:

The loss of competitive advantage or market share
The loss of public confidence or credibility, or incurring public mbarrassment

During the vulnerability assessment, critical support areas must be defined in order to assess the impact of a disruptive event. A critical support area is defined as a business unit or function that must be present to sustain continuity of the business processes, maintain life safety, or avoid public relations embarrassment.

Critical support areas could include the following:

Telecommunications, data communications, or information technology areas
Physical infrastructure or plant facilities, transportation services
Accounting, payroll, transaction processing, customer service, purchasing

The granular elements of these critical support areas will also need to be identified. By granular elements we mean the personnel, resources, and services the critical support areas need to maintain business continuity

Reference(s) used for this question:

Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 4628-4632). Auerbach Publications. Kindle Edition.

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 277.

QUESTION 525
The scope and focus of the Business continuity plan development depends most on:

A. Directives of Senior Management
B. Business Impact Analysis (BIA)
C. Scope and Plan Initiation
D. Skills of BCP committee

Correct Answer: B

Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
SearchStorage.com Definitions mentions "As part of a disaster recovery plan, BIA is likely to identify costs linked to failures, such as loss of cash flow, replacement of equipment, salaries paid to catch up with a backlog of work, loss of profits, and so on.

A BIA report quantifies the importance of business components and suggests appropriate fund allocation for measures to protect them. The possibilities of failures are likely to be assessed in terms of their impacts on safety, finances, marketing, legal compliance, and quality assurance.

Where possible, impact is expressed monetarily for purposes of comparison. For example, a business may spend three times as much on marketing in the wake of a disaster to rebuild customer confidence."

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 278.

QUESTION 526
Which of the following items is NOT a benefit of cold sites?

A. No resource contention with other organisation
B. Quick Recovery
C. A secondary location is available to reconstruct the environment
D. Low Cost

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A cold site is a permanent location that provide you with your own space that you can move into in case of a disaster or catastrophe. It is one of the cheapest solution available as a rental place but it is also the one that would take the most time to recover. A cold site usually takes one to two weeks for recoverey.

Although major disruptions with long-term effects may be rare, they should be accounted for in the contingency plan. The plan should include a trategy to recover and perform system operations at an alternate facility for an extended period. In general, three types of alternate sites are available:

Dedicated site owned or operated by the organization. Also called redundant or alternate sites;
Reciprocal agreement or memorandum of agreement with an internal or external entity; and
Commercially leased facility.

Regardless of the type of alternate site chosen, the facility must be able to support system operations as defined in the contingency plan. The three alternate site types commonly categorized in terms of their operational readiness are cold sites, warm sites, or hot sites. Other variations or combinations of these can be found, but generally all variations retain similar core features found in one of these three site types.

Progressing from basic to advanced, the sites are described below:

Cold Sites are typically facilities with adequate space and infrastructure (electric power, telecommunications connections, and environmental controls) to support information system recovery activities.

ƒWarm Sites are partially equipped office spaces that contain some or all of the system hardware, software, telecommunications, and power sources.

Hot Sites are facilities appropriately sized to support system requirements and configured with the necessary system hardware, supporting infrastructure, and support personnel.

As discussed above, these three alternate site types are the most common. There are also variations, and hybrid mixtures of features from any one of the three. Each organization should evaluate its core requirements in order to establish the most effective solution.

Two examples of variations to the site types are:

ƒMobile Sites are self-contained, transportable shells custom-fitted with specific telecommunications and system equipment necessary to meet system requirements.

ƒMirrored Sites are fully redundant facilities with automated real-time information mirroring. Mirrored sites are identical to the primary site in all technical respects.

There are obvious cost and ready-time differences among the options. In these examples, the mirrored site is the most expensive choice, but it ensures virtually 100 percent availability. Cold sites are the least expensive to maintain, although they may require substantial time to acquire and install necessary equipment. Partially equipped sites, such as warm sites, fall in the middle of the spectrum. In many cases, mobile sites may be delivered to the desired location within 24 hours, but the time necessary for equipment installation and setup can increase this response time. The selection of fixed-site locations should account for the time and mode of transportation necessary to move personnel and/or equipment there. In addition, the fixed site should be in a geographic area that is unlikely to be negatively affected by the same hazard as the organization's primary site.

The following reference(s) were used for this question:
http://csrc.nist.gov/publications/nistpubs/800-34-rev1/sp800-34-rev1_errata-Nov11-2010.pdf

QUESTION 527
Qualitative loss resulting from the business interruption does NOT usually include:

A. Loss of revenue
B. Loss of competitive advantage or market share
C. Loss of public confidence and credibility

D. Loss of market leadership

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
This question is testing your ability to evaluate whether items on the list are Qualitative or Quantitative. All of the items listed were Qualitative except Lost of Revenue which is Quantitative.

Those are mainly two approaches to risk analysis, see a description of each below:

A quantitative risk analysis is used to assign monetary and numeric values to all elements of the risk analysis process. Each element within the analysis (asset value, threat frequency, severity of vulnerability, impact damage, safeguard costs, safeguard effectiveness, uncertainty, and probability items) is quantified and entered into equations to determine total and residual risks. It is more of a scientific or mathematical approach to risk analysis compared to qualitative.

A qualitative risk analysis uses a “softer” approach to the data elements of a risk analysis . It does not quantify that data, which means that it does not assign numeric values to the data so that they can be used in equations.

Qualitative and quantitative impact information should be gathered and then properly analyzed and interpreted. The goal is to see exactly how a business will be affected by different threats.

The effects can be economical, operational, or both. Upon completion of the data analysis, it should be reviewed with the most knowledgeable people within the company to ensure that the findings are appropriate and that it describes the real risks and impacts the organization faces. This will help flush out any additional data points not originally obtained and will give a fuller understanding of all the possible business impacts.

Loss criteria must be applied to the individual threats that were identified. The criteria may include the following:

Loss in reputation and public confidence
Loss of competitive advantages
Increase in operational expenses
Violations of contract agreements
Violations of legal and regulatory requirements
Delayed income costs
Loss in revenue
Loss in productivity

Reference used for this question:
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 909). McGraw-Hill. Kindle Edition.

QUESTION 528
When you update records in multiple locations or you make a copy of the whole database at a remote location as a way to achieve the proper level of fault-tolerance and redundancy, it is knows as?

A. Shadowing
B. Data mirroring
C. Backup
D. Archiving

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Updating records in multiple locations or copying an entire database to a remote location as a means to ensure the appropriate levels of fault-tolerance and redundancy is known as Database shadowing. Shadowing is the technique in which updates are shadowed in multiple locations. It is like copying the entire database on to a remote location.

Shadow files are an exact live copy of the original active database, allowing you to maintain live duplicates of your production database, which can be brought into production in the event of a hardware failure. They are used for security reasons: should the original database be damaged or incapacitated by hardware problems, the shadow can immediately take over as the primary database. It is therefore important that shadow files do not run on the same server or at least on the same drive as the primary database files.

The following are incorrect answers:

Data mirroring In data storage, disk mirroring is the replication of logical disk volumes onto separate physical hard disks in real time to ensure continuous availability. It is most commonly used in RAID 1. A mirrored volume is a complete logical representation of separate volume copies.

Backups In computing the phrase backup means to copy files to a second medium (a disk or tape) as a precaution in case the first medium fails. One of the cardinal rules in using computers is back up your files regularly. Backups are useful in recovering information or a system in the event of a disaster, else you may be very sorry :-(

Archiving is the storage of data that is not in continual use for historical purposes. It is the process of copying files to a long-term storage medium for backup.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 27614-27626). Auerbach Publications. Kindle Edition.

http://en.wikipedia.org/wiki/Disk_mirroring
http://www.webopedia.com/TERM/A/archive.html
http://ibexpert.net/ibe/index.php?n=Doc.DatabaseShadow

QUESTION 529
Recovery Site Strategies for the technology environment depend on how much downtime an organization can tolerate before the recovery must be completed. What would you call a strategy where the alternate site is internal, standby ready, with all the technology and equipment necessary to run the applications?

A. External Hot site
B. Warm Site
C. Internal Hot Site
D. Dual Data Center

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Internal Hot Site—This site is standby ready with all the technology and equipment necessary to run the applications positioned there. The planner will be able to effectively restart an application in a hot site recovery without having to perform any bare metal recovery of servers. If this is an internal solution, then often the organization will run non-time sensitive processes there such as development or test environments, which will be pushed aside for recovery of production when needed. When employing this strategy, it is important that the two environments be kept as close to identical as possible to avoid problems with O/S levels, hardware differences, capacity differences, etc., from preventing or delaying recovery.
Recovery Site Strategies Depending on how much downtime an organization has before the technology recovery must be complete, recovery strategies selected for the technology environment could be any one of the following:
Dual Data Center—This strategy is employed for applications, which cannot accept any downtime without negatively impacting the organization. The applications are split between two geographically dispersed data centers and either load balanced between the two centers or hot swapped between the two centers. The surviving data center must have enough head room to carry the full production load in either case.

External Hot Site—This strategy has equipment on the floor waiting, but the environment must be rebuilt for the recovery. These are services contracted through a recovery service provider. Again, it is important that the two environments be kept as close to identical as possible to avoid problems with O/S levels, hardware differences, capacity differences, etc., from preventing or delaying recovery. Hot site vendors tend to have the most commonly used hardware and software products to attract the largest number of customers to utilize the site. Unique equipment or software would generally need to be provided by the organization either at time of disaster or stored there ahead of time.
Warm Site—A leased or rented facility that is usually partially configured with some equipment, but not the actual computers. It will generally have all the cooling, cabling, and networks in place to accommodate the recovery but the actual servers, mainframe, etc., equipment are delivered to the site at time of disaster.
Cold Site—A cold site is a shell or empty data center space with no technology on the floor. All technology must be purchased or acquired at the time of disaster.

Reference(s) used for this question:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 21265-21291). Auerbach Publications. Kindle Edition.

QUESTION 530
What is the most correct choice below when talking about the steps to resume normal operation at the primary site after the green light has been given by the salvage team?

A. The most critical operations are moved from alternate site to primary site before others
B. Operation may be carried by a completely different team than disaster recovery team
C. The least critical functions should be moved back first
D. You moves items back in the same order as the categories document in your plan or exactly in the same order as you did on your way to the alternate site

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
It's interesting to note that the steps to resume normal processing operations will be different than the steps of the recovery plan; that is, the least critical work should be brought back first to the primary site.

The most important point above in the steps would be to move the least critical items or resources back to the primary site first. This way you can ensure that the site was really well prepared and that all is working fine.

Before that first step would be done, you would get the green light from the salvage team that it is fine to move back to the primary site. The first step after getting the green light would be to move the least critical elements first.

As stated in the Shon Harris book:
The least critical functions should be moved back first, so if there are issues in network configurations or connectivity, or important steps were not carried out, the critical operations of the company are not negatively affected. Why go through the trouble of moving the most critical systems and operations to a safe and stable site, only to return it to a main site that is untested? Let the less critical departments act as the canary. If they survive, then move over the more critical components of the company.

When it is time for the company to move back into its original site or a new site, the company enters the reconstitution phase. A company is not out of an emergency state until it is back in operation at the original primary site or a new site that was constructed to replace the primary site, because the company is always vulnerable while operating in a backup facility.

Many logistical issues need to be considered as to when a company must return from the alternate site to the original site. The following lists a few of these issues:

Ensuring the safety of employees
Ensuring an adequate environment is provided (power, facility infrastructure, water, HVAC)
Ensuring that the necessary equipment and supplies are present and in working order
Ensuring proper communications and connectivity methods are working
Properly testing the new environment

Once the coordinator, management, and salvage team sign off on the readiness of the facility, the salvage team should carry out the following steps:

Back up data from the alternate site and restore it within the new facility.
Carefully terminate contingency operations.
Securely transport equipment and personnel to the new facility.

All other choices are not the correct answer.

Reference(s) used for this question:
Harris, Shon (2012-10-25). CISSP All-in-One Exam Guide, 6th Edition (Kindle Location 19389). McGraw-Hill. Kindle Edition.
and
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, Page 290.

QUESTION 531
What would be the Annualized Rate of Occurrence (ARO) of the threat "user input error", in the case where a company employs 100 data entry clerks and every one of them makes one input error each month?

A. 100

B. 120
C. 1
D. 1200

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
If every one of the 100 clerks makes 1 error 12 times per year, it makes a total of 1200 errors. The Annnualized Rate of Occurence (ARO) is a value that represents the estimated frequency in which a threat is expected to occur. The range can be from 0.0 to a large number. Having an average of 1200 errors per year means an ARO of 1200

QUESTION 532

How is Annualized Loss Expectancy (ALE) derived from a threat?

A. ARO x (SLE - EF)
B. SLE x ARO
C. SLE/EF
D. AV x EF

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Three steps are undertaken in a quantitative risk assessment:

Initial management approval
Construction of a risk assessment team, and
The review of information currently available within the organization.

There are a few formulas that you MUST understand for the exam. See them below:

SLE (Single Loss Expectancy)
Single loss expectancy (SLE) must be calculated to provide an estimate of loss. SLE is defined as the difference between the original value and the remaining value of an asset after a single exploit.

The formula for calculating SLE is as follows: SLE = asset value (in $) × exposure factor (loss due to successful threat exploit, as a %)

Losses can include lack of availability of data assets due to data loss, theft, alteration, or denial of service (perhaps due to business continuity or security issues).

ALE (Annualized Loss Expectancy)
Next, the organization would calculate the annualized rate of occurrence (ARO).

This is done to provide an accurate calculation of annualized loss expectancy (ALE).

ARO is an estimate of how often a threat will be successful in exploiting a vulnerability over the period of a year.

When this is completed, the organization calculates the annualized loss expectancy (ALE).
The ALE is a product of the yearly estimate for the exploit (ARO) and the loss in value of an asset after an SLE.

The calculation follows ALE = SLE x ARO

Note that this calculation can be adjusted for geographical distances using the local annual frequency estimate (LAFE) or the standard annual frequency estimate (SAFE). Given that there is now a value for SLE, it is possible to determine what the organization should spend, if anything, to apply a countermeasure for the risk in question.

Remember that no countermeasure should be greater in cost than the risk it mitigates, transfers, or avoids.
Countermeasure cost per year is easy and straightforward to calculate. It is simply the cost of the countermeasure divided by the years of its life (i.e., use within the organization). Finally, the organization is able to compare the cost of the risk versus the cost of the countermeasure and make some objective decisions regarding its countermeasure selection.

The following were incorrect answers:

All of the other choices were incorrect.

The following reference(s) were used for this quesiton:
Hernandez CISSP, Steven (2012-12-21). Official (ISC)2 Guide to the CISSP CBK, Third Edition ((ISC)2 Press) (Kindle Locations 10048-10069). Auerbach Publications. Kindle Edition.

QUESTION 533
What does "residual risk" mean?

A. The security risk that remains after controls have been implemented
B. Weakness of an assets which can be exploited by a threat
C. Risk that remains after risk assessment has has been performed
D. A security risk intrinsic to an asset being audited, where no mitigation has taken place.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Residual risk is "The security risk that remains after controls have been implemented" ISO/IEC TR 13335-1 Guidelines for the Management of IT Security (GMITS), Part 1: Concepts and Models for IT Security, 1996. "Weakness of an assets which can be exploited by a threat" is vulnerability. "The result of unwanted incident" is impact. Risk that remains after risk analysis has been performed is a distracter.

Risk can never be eliminated nor avoided, but it can be mitigated, transferred or accpeted. Even after applying a countermeasure like for example putiing up an Antivirus. But still it is not 100% that systems will be protected by antivirus.

QUESTION 534
Business Continuity and Disaster Recovery Planning (Primarily) addresses the:

A. Availability of the CIA triad
B. Confidentiality of the CIA triad
C. Integrity of the CIA triad
D. Availability, Confidentiality and Integrity of the CIA triad

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Information Technology (IT) department plays a very important role in identifying and protecting the company's internal and external information dependencies. Also, the information technology elements of the BCP should address several vital issue, including:

Ensuring that the company employs sufficient physical security mechanisms to preserve vital network and hardware components. including file and print servers. Ensuring that the organization uses sufficient logical security methodologies (authentication, authorization, etc.) for sensitive data.

Reference: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, John Wiley & Sons, 2001, page 279.

QUESTION 535
What is called an event or activity that has the potential to cause harm to the information systems or networks?

A. Vulnerability
B. Threat agent
C. Weakness
D. Threat

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Pages 16, 32.

QUESTION 536
A weakness or lack of a safeguard, which may be exploited by a threat, causing harm to the information systems or networks is called a ?

A. Vulnerability
B. Risk
C. Threat
D. Overflow

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Answer: Vulnerability; Vulnerability is a weakness or lack of a safeguard, which may be exploited by a threat, causing harm to the information systems or networks.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Pages 16, 32.

QUESTION 537
What is called the probability that a threat to an information system will materialize?

A. Threat
B. Risk
C. Vulnerability
D. Hole

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Answer: Risk: The potential for harm or loss to an information system or network; the probability that a threat will materialize.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Pages 16, 32.

QUESTION 538
Risk mitigation and risk reduction controls for providing information security are classified within three main categories, which of the following are being used?

A. preventive, corrective, and administrative
B. detective, corrective, and physical

C. Physical, technical, and administrative
D. Administrative, operational, and logical

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Security is generally defined as the freedom from danger or as the condition of safety. Computer security, specifically, is the protection of data in a system against unauthorized disclosure, modification, or destruction and protection of the computer system itself against unauthorized use, modification, or denial of service. Because certain computer security controls inhibit productivity, security is typically a compromise toward which security practitioners, system users, and system operations and administrative personnel work to achieve a satisfactory balance between security and productivity.

Controls for providing information security can be physical, technical, or administrative.
These three categories of controls can be further classified as either preventive or detective. Preventive controls attempt to avoid the occurrence of unwanted events, whereas detective controls attempt to identify unwanted events after they have occurred. Preventive controls inhibit the free use of computing resources and therefore can be applied only to the degree that the users are willing to accept. Effective security awareness programs can help increase users' level of tolerance for preventive controls by helping them understand how such controls enable them to trust their computing systems. Common detective controls include audit trails, intrusion detection methods, and checksums.

Three other types of controls supplement preventive and detective controls. They are usually described as deterrent, corrective, and recovery.

Deterrent controls are intended to discourage individuals from intentionally violating information security policies or procedures. These usually take the form of constraints that make it difficult or undesirable to perform unauthorized activities or threats of consequences that influence a potential intruder to not violate security (e.g., threats ranging from embarrassment to severe punishment).
Corrective controls either remedy the circumstances that allowed the unauthorized activity or return conditions to what they were before the violation. Execution of corrective controls could result in changes to existing physical, technical, and administrative controls.
Recovery controls restore lost computing resources or capabilities and help the organization recover monetary losses caused by a security violation.

Deterrent, corrective, and recovery controls are considered to be special cases within the major categories of physical, technical, and administrative controls; they do not clearly belong in either preventive or detective categories. For example, it could be argued that deterrence is a form of prevention because it can cause an intruder to turn away; however, deterrence also involves detecting violations, which may be what the intruder fears most. Corrective controls, on the other hand, are not preventive or detective, but they are clearly linked with technical controls when antiviral software eradicates a virus or with administrative controls when backup procedures enable restoring a damaged data base. Finally, recovery controls are neither preventive nor detective but are included in administrative controls as disaster recovery or contingency plans.

Reference(s) used for this question
Handbook of Information Security Management, Hal Tipton

QUESTION 539
In the course of responding to and handling an incident, you work on determining the root cause of the incident. In which step are you in?

A. Recovery
B. Containment
C. Triage
D. Analysis and tracking

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
In this step, your main objective is to examine and analyze what has occurred and focus on determining the root cause of the incident.

Recovery is incorrect as recovery is about resuming operations or bringing affected systems back into production

Containment is incorrect as containment is about reducing the potential impact of an incident.

Triage is incorrect as triage is about determining the seriousness of the incident and filtering out false positives

Reference:
Official Guide to the CISSP CBK, pages 700-704

QUESTION 540
Which of the following assertions is NOT true about pattern matching and anomaly detection in intrusion detection?

A. Anomaly detection tends to produce more data
B. A pattern matching IDS can only identify known attacks
C. Stateful matching scans for attack signatures by analyzing individual packets instead of traffic streams
D. An anomaly-based engine develops baselines of normal traffic activity and throughput, and alerts on deviations from these baselines

Correct Answer: C
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:

This is wrong which makes this the correct choice. This statement is not true as stateful matching scans for attack signatures by analyzing traffic streams rather than individual packets. Stateful matching intrusion detection takes pattern matching to the next level.

As networks become faster there is an emerging need for security analysis techniques that can keep up with the increased network throughput. Existing networkbased intrusion detection sensors can barely keep up with bandwidths of a few hundred Mbps. Analysis tools that can deal with higher throughput are unable to maintain state between different steps of an attack or they are limited to the analysis of packet headers.

The following answers are all incorrect:

Anomaly detection tends to produce more data is true as an anomaly-based IDS produces a lot of data as any activity outside of expected behavior is recorded.

A pattern matching IDS can only identify known attacks is true as a pattern matching IDS works by comparing traffic streams against signatures. These signatures are created for known attacks.

An anomaly-based engine develops baselines of normal traffic activity and throughput, and alerts on deviations from these baselines is true as the assertion is a characteristic of a statistical anomaly-based IDS.

Reference:
Official guide to the CISSP CBK. Pages 198 to 201
http://cs.ucsb.edu/~vigna/publications/2003_vigna_robertson_kher_kemmerer_ACSAC03.pdf

QUESTION 541
The IP header contains a protocol field. If this field contains the value of 51, what type of data is contained within the ip datagram?

A. Transmission Control Protocol (TCP)
B. Authentication Header (AH)
C. User datagram protocol (UDP)
D. Internet Control Message Protocol (ICMP)

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
TCP has the value of 6
UDP has the value of 17
ICMP has the value of 1
Reference:
SANS http://www.sans.org/resources/tcpip.pdf?ref=3871

QUESTION 542
Which of the following is NOT a correct notation for an IPv6 address?

A. 2001:0db8:0:0:0:0:1428:57ab
B. ABCD:EF01:2345:6789:ABCD:EF01:2345:6789
C. ::1
D. 2001:DB8::8:800::417A

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
This is not a correct notation for an IPv6 address because the the "::" can only appear once in an address. The use of "::" is a shortcut notation that indicates one or more groups of 16 bits of zeros.

::1 is the loopback address using the special notation
Reference: IP Version 6 Addressing Architecture
http://tools.ietf.org/html/rfc4291#section-2.1

QUESTION 543
Another example of Computer Incident Response Team (CIRT) activities is:

A. Management of the netware logs, including collection, retention, review, and analysis of data
B. Management of the network logs, including collection and analysis of data
C. Management of the network logs, including review and analysis of data
D. Management of the network logs, including collection, retention, review, and analysis of data

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Additional examples of CIRT activities are:

Management of the network logs, including collection, retention, review, and analysis of data

Management of the resolution of an incident, management of the remediation of a vulnerability, and post-event reporting to the appropriate parties.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 64.

QUESTION 544
Which of the following backup methods makes a complete backup of every file on the server every time it is run?

A. full backup method.
B. incremental backup method.
C. differential backup method.
D. tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Full Backup Method makes a complete backup of every file on the server every time it is run.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.

QUESTION 545
Which of the following backup methods is primarily run when time and tape space permits, and is used for the system archive or baselined tape sets?

A. full backup method.
B. incremental backup method.
C. differential backup method.
D. tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Full Backup Method is primarily run when time and tape space permits, and is used for the system archive or baselined tape sets.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.

QUESTION 546
Which backup method usually resets the archive bit on the files after they have been backed up?

A. Incremental backup method.
B. Differential backup method.
C. Partial backup method.
D. Tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The incremental backup method usually resets the archive bit on the files after they have been backed up.

An Incremental Backup will backup all the files that have changed since the last Full Backup (the first time it is run after a full backup was previously completed) or after an Incremental Backup (for the second backup and subsequent backups) and sets the archive bit to 0. This type of backup take less time during the backup phase but it will take more time to restore.

The other answers are all incorrect choices.

The following backup types also exists:
Full Backup - All data are backed up. The archive bit is cleared, which means that it is set to 0.
Differential Backup - Backup the files that have been modified since the last Full Backup. The archive bit does not change. Take more time while the backup phase is performed and take less time to restore.

Reference(s) used for this question:
KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.

QUESTION 547
Which backup method is used if backup time is critical and tape space is at an extreme premium?

A. Incremental backup method.
B. Differential backup method.
C. Full backup method.
D. Tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Full Backup/Archival Backup - Complete/Full backup of every selected file on the system regardless of whether it has been backup recently.. This is the slowest of the backup methods since it backups all the data. It's however the fastest for restoring data.

Incremental Backup - Any backup in which only the files that have been modified since last full back up are backed up. The archive attribute should be updated while backing up only modified files, which indicates that the file has been backed up. This is the fastest of the backup methods, but the slowest of the restore methods.

Differential Backup - The backup of all data files that have been modified since the last incremental backup or archival/full backup. Uses the archive bit to determine what files have changed since last incremental backup or full backup. The files grows each day until the next full backup is performed clearing the archive attributes. This enables the user to restore all files changed since the last full backup in one pass. This is a more neutral method of backing up data since it's not faster nor slower than the other two

Easy Way To Remember each of the backup type properties:

	Backup Speed	Restore Speed
Full	3	1
Differential	2	2
Incremental	1	3

Legend: 1 = Fastest 2 = Faster 3 = Slowest

Source:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.
and
http://www.proprofs.com/mwiki/index.php/Full_Backup,_Incremental_%26_Differential_Backup

QUESTION 548
Which backup method copies only files that have changed since the last full backup, but does not clear the archive bit?

A. Differential backup method.
B. Full backup method.
C. Incremental backup method.
D. Tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
One of the key item to understand regarding backup is the archive bit. The archive bit is used to determine what files have been backuped already. The archive bit is set if a file is modified or a new file is created, this indicates to the backup program that it has to be saved on the next backup. When a full backup is performed the archive bit will be cleared indicating that the files were backup. This allows backup programs to do an incremental or differential backup that only backs up the changes to the filesystem since the last time the bit was cleared Full Backup (or Reference Backup)
A Full backup will backup all the files and folders on the drive every time you run the full backup. The archive bit is cleared on all files indicating they were all backuped.

Advantages:
All files from the selected drives and folders are backed up to one backup set.
In the event you need to restore files, they are easily restored from the single backup set.

Disadvantages:
A full backup is more time consuming than other backup options.
Full backups require more disk, tape, or network drive space.
Incremental Backup
An incremental backup provides a backup of files that have changed or are new since the last incremental backup.

For the first incremental backup, all files in the file set are backed up (just as in a full backup). If you use the same file set to perform a incremental backup later, only the files that have changed are backed up. If you use the same file set for a third backup, only the files that have changed since the second backup are backed up, and so on.

Incremental backup will clear the archive bit.
Advantages:
Backup time is faster than full backups.
Incremental backups require less disk, tape, or network drive space.
You can keep several versions of the same files on different backup sets.
Disadvantages:
In order to restore all the files, you must have all of the incremental backups available.
It may take longer to restore a specific file since you must search more than one backup set to find the latest version of a file.
Differential Backup

A differential backup provides a backup of files that have changed since a full backup was performed. A differential backup typically saves only the files that are different or new since the last full backup. Together, a full backup and a differential backup include all the files on your computer, changed and unchanged.

Differential backup do not clear the archive bits.

Advantages:

Differential backups require even less disk, tape, or network drive space than incremental backups. Backup time is faster than full or incremental backups. Disadvantages:
Restoring all your files may take considerably longer since you may have to restore both the last differential and full backup. Restoring an individual file may take longer since you have to locate the file on either the differential or full backup.

For more info see: http://support.microsoft.com/kb/136621

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.

QUESTION 549
Which backup method is additive because the time and tape space required for each night's backup grows during the week as it copies the day's changed files and the previous days' changed files up to the last full backup?

A. differential backup method
B. full backup methodC. incremental backup method
D. tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The Differential Backup Method is additive because the time and tape space required for each night's backup grows during the week as it copies the day's changed files and the previous days' changed files up to the last full backup.
Archive Bits

Unless you've done a lot of backups in your time you've probably never heard of an Archive Bit. An archive bit is, essentially, a tag that is attached to every file. In actuality, it is a binary digit that is set on or off in the file, but that's crummy technical jargon that doesn't really tell us anything. For the sake of our discussion, just think of it as the flag on a mail box. If the flag is up, it means the file has been changed. If it's down, then the file is unchanged.

Archive bits let the backup software know what needs to be backed up. The differential and incremental backup types rely on the archive bit to direct them.
Backup Types

Full or Normal
The "Full" or "normal" backup type is the most standard. This is the backup type that you would use if you wanted to backup every file in a given folder or drive. It backs up everything you direct it to regardless of what the archive bit says. It also resets all archive bits (puts the flags down). Most backup software, including the built-in Windows backup software, lets you select down to the individual file that you want backed up. You can also choose to backup things like the "system state".

Incremental

When you schedule an incremental backup, you are in essence instructing the software to only backup files that have been changed, or files that have their flag up. After the incremental backup of that file has occured, that flag will go back down. If you perform a normal backup on Monday, then an incremental backup on Wednesday, the only files that will be backed up are those that have changed since Monday. If on Thursday someone deletes a file by accident, in order to get it back you will have to restore the full backup from Monday, followed by the Incremental backup from Wednesday.

Differential
Differential backups are similar to incremental backups in that they only backup files with their archive bit, or flag, up. However, when a differential backup occurs it does not reset those archive bits which means, if the following day, another differential backup occurs, it will back up that file again regardless of whether that file has been changed or not.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.

And: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 9: Disaster Recovery and Business continuity (pages 617619).
And: http://www.brighthub.com/computing/windows-platform/articles/24531.aspx

QUESTION 550
Which of the following backup method must be made regardless of whether Differential or Incremental methods are used?

A. Full Backup Method.
B. Incremental backup method.
C. Supplemental backup method.
D. Tape backup method.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A Full Backup must be made regardless of whether Differential or Incremental methods are used.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 69.
And: HARRIS, Shon, All-In-One CISSP Certification Exam Guide, McGraw-Hill/Osborne, 2002, chapter 9: Disaster Recovery and Business continuity (pages 617619).

QUESTION 551
Which of the following tape formats can be used to backup data systems in addition to its original intended audio uses?

A. Digital Video Tape (DVT).

B. Digital Analog Tape (DAT).
C. Digital Voice Tape (DVT).
D. Digital Audio Tape (DAT).

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Digital Audio Tape (DAT) can be used to backup data systems in addition to its original intended audio uses.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 70.

QUESTION 552
Which of the following is a large hardware/software backup system that uses the RAID technology?

A. Tape Array.
B. Scale Array.
C. Crimson Array
D. Table Array.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
A Tape Array is a large hardware/software backup system based on the RAID technology.

There is a misconception that RAID can only be used with Disks.
All large storage vendor from HP, to EMC, to Compaq have Tape Array based on RAID technology they offer.

This is a VERY common type of storage at an affordable price as well.

So RAID is not exclusively for DISKS. Often time this is referred to as Tape Librairies or simply RAIT.
RAIT (redundant array of independent tapes) is similar to RAID, but uses tape drives instead of disk drives. Tape storage is the lowest-cost option for very large amounts of data, but is very slow compared to disk storage. As in RAID 1 striping, in RAIT, data are striped in parallel to multiple tape drives, with or without a redundant parity drive. This provides the high capacity at low cost typical of tape storage, with higher-than-usual tape data transfer rates and optional data integrity.

References:

KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 70.
and
Harris, Shon (2012-10-18). CISSP All-in-One Exam Guide, 6th Edition (p. 1271). McGraw-Hill. Kindle Edition.

QUESTION 553
This type of backup management provides a continuous on-line backup by using optical or tape "jukeboxes," similar to WORMs (Write Once, Read Many):

A. Hierarchical Storage Management (HSM).
B. Hierarchical Resource Management (HRM).
C. Hierarchical Access Management (HAM).
D. Hierarchical Instance Management (HIM).

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Hierarchical Storage Management (HSM) provides a continuous on-line backup by using optical or tape "jukeboxes," similar to WORMs.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 71.

QUESTION 554
Hierarchical Storage Management (HSM) is commonly employed in:

A. very large data retrieval systems
B. very small data retrieval systems
C. shorter data retrieval systems
D. most data retrieval systems

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Hierarchical Storage Management (HSM) is commonly employed in very large data retrieval systems.
Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 71.

QUESTION 555
Physically securing backup tapes from unauthorized access is obviously a security concern and is considered a function of the:

A. Operations Security Domain.
B. Operations Security Domain Analysis.
C. Telecommunications and Network Security Domain.
D. Business Continuity Planning and Disater Recovery Planning.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
Physically securing the tapes from unauthorized access is obviously a security concern and is considered a function of the Operations Security Domain.

Source: KRUTZ, Ronald L. & VINES, Russel D., The CISSP Prep Guide: Mastering the Ten Domains of Computer Security, 2001, John Wiley & Sons, Page 71.

QUESTION 556
What is the MOST critical piece to disaster recovery and continuity planning?

A. Security policy
B. Management support
C. Availability of backup information processing facilities
D. Staff training

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
The keyword is ' MOST CRITICAL ' and the correct answer is ' Management Support ' as the management must be convinced of its necessity and that's why a business case must be made. The decision of how a company should recover from any disaster is purely a business decision and should be treated as so.

The other answers are incorrect because :

Security policy is incorrect as it is not the MOST CRITICAL piece.

Availability of backup information processing facilities is incorrect as this comes once the organization has BCP Plans in place and for a BCP Plan , management support must be there.

Staff training comes after the plans are in place with the support from management.
Reference : Shon Harris , AIO v3 , Chapter-9: Business Continuity Planning , Page : 697.

QUESTION 557
During the testing of the business continuity plan (BCP), which of the following methods of results analysis provides the BEST assurance that the plan is workable?

A. Measurement of accuracy
B. Elapsed time for completion of critical tasks
C. Quantitatively measuring the results of the test
D. Evaluation of the observed test results

Correct Answer: C
Section: Risk, Response and Recovery
Explanation
Explanation/Reference:
It is important to have ways to measure the success of the plan and tests against the stated objectives. Therefore, results must be quantitatively gauged as opposed to an evaluation based only on observation. Quantitatively measuring the results of the test involves a generic statement measuring all the activities performed during BCP, which gives the best assurance of an effective plan. Although choices A and B are also quantitative, they relate to specific areas, or an analysis of results from one viewpoint, namely the accuracy of the results and the elapsed time.
Source: Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, Chapter 5: Disaster Recovery and Business Continuity (page 269).

QUESTION 558
Which of the following statements regarding an off-site information processing facility is TRUE?

A. It should have the same amount of physical access restrictions as the primary processing site.
B. It should be located in proximity to the originating site so that it can quickly be made operational.
C. It should be easily identified from the outside so in the event of an emergency it can be easily found.
D. Need not have the same level of environmental monitoring as the originating site since this would be cost prohibitive.

Correct Answer: A
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
It is very important that the offsite has the same restrictions in order to avoide misuse.

The following answers are incorrect because:

It should be located in proximity to the originating site so that it can quickly be made operational is incorrect as the offsite is also subject to the same disaster as of the primary site.

It should be easily identified from the outside so in the event of an emergency it can be easily found is also incorrect as it should not be easily identified to prevent intentional sabotage.
Need not have the same level of environmental monitoring as the originating site since this would be cost prohibitive is also incorrect as it should be like its primary site.

Reference : Information Systems Audit and Control Association, Certified Information Systems Auditor 2002 review manual, chapter 5: Disaster Recovery and Business Continuity (page 265).

QUESTION 559
What is the PRIMARY goal of incident handling?

A. Successfully retrieve all evidence that can be used to prosecute

B. Improve the company's ability to be prepared for threats and disasters
C. Improve the company's disaster recovery plan
D. Contain and repair any damage caused by an event.

Correct Answer: D
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
This is the PRIMARY goal of an incident handling process.

The other answers are incorrect because :

Successfully retrieve all evidence that can be used to prosecute is more often used in identifying weaknesses than in prosecuting.

Improve the company's ability to be prepared for threats and disasters is more appropriate for a disaster recovery plan.

Improve the company's disaster recovery plan is also more appropriate for disaster recovery plan.
Reference : Shon Harris AIO v3 , Chapter - 10 : Law, Investigation, and Ethics , Page : 727-728

QUESTION 560
Which of the following outlined how senior management are responsible for the computer and information security decisions that they make and what actually took place within their organizations?

A. The Computer Security Act of 1987.
B. The Federal Sentencing Guidelines of 1991.

C. The Economic Espionage Act of 1996.
D. The Computer Fraud and Abuse Act of 1986.

Correct Answer: B
Section: Risk, Response and Recovery
Explanation

Explanation/Reference:
In 1991, U.S. Federal Sentencing Guidelines were developed to provide judges with courses of action in dealing with white collar crimes. These guidelines provided ways that companies and law enforcement should prevent, detect and report computer crimes. It also outlined how senior management are responsible for the computer and information security decisions that they make and what actually took place within their organizations.