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Exam Code: 100-101

Exam Name: CCNA Interconnecting Cisco Networking Devices 1 (ICND1)

Exam

QUESTION 1
Which three statements are true about the operation of a full-duplex Ethernet network? (Choose three.)

A. There are no collisions in full-duplex mode.
B. A dedicated switch port is required for each full-duplex node.
C. Ethernet hub ports are preconfigured for full-duplex mode.
D. In a full-duplex environment, the host network card must check for the availability of the network media before transmitting.
E. The host network card and the switch port must be capable of operating in full-duplex mode.

Correct Answer: ABE
Section: (none)
Explanation

Explanation/Reference:
Half-duplex Ethernet is defined in the original 802.3 Ethernet and Cisco says you only use one wire pair with a digital signal running in both directions on the wire. It also uses the CSMA/CD protocol to help prevent collisions and to permit retransmitting if a collision does occur. If a hub is attached to a switch, it must operate in half-duplex mode because the end stations must be able to detect collisions. Half-duplex Ethernet--typically 10BaseT--is only about 30 to 40 percent efficient as Cisco sees it, because a large 10BaseT network will usually only give you 3- to 4Mbps--at most.
Full-duplex Ethernet uses two pairs of wires, instead of one wire pair like half duplex. Also, full duplex uses a point-to-point connection between the transmitter of the transmitting device and the receiver of the receiving device, which means that with full-duplex data transfer, you get a faster data transfer compared to half duplex. And because the transmitted data is sent on a different set of wires than the received data, no collisions occur. The reason you don't need to worry about collisions is because now Full-duplex Ethernet is like a freeway with multiple lanes instead of the single-lane road provided by half duplex. Full-duplex Ethernet is supposed to offer 100 percent efficiency in both directions; this means you can get 20Mbps with a 10Mbps Ethernet running full duplex, or 200Mbps for FastEthernet.

QUESTION 2

Select and Place:

On the left are various network protocols. On the right are the layers of the TCP/IP model. Assuming a reliable connection is required, move the protocols or to the TCP/IP layers on the right to show the proper encapsulation for an email message sent by a host on a LAN. (Not all options are used.)

UDP	application layer
SNMP	transport layer
IP	internet layer
ARP	network access layer
Ethernet	
TCP	
SMTP	

Correct Answer:

On the left are various network protocols. On the right are the layers of the TCP/IP model. Assuming a reliable connection is required, move the protocols or to the TCP/IP layers on the right to show the proper encapsulation for an email message sent by a host on a LAN. (Not all options are used.)

UDP	SMTP
SNMP	TCP
	IP
ARP	Ethernet

Section: (none)
Explanation

Explanation/Reference:

QUESTION 3
Which OSI layer header contains the address of a destination host that is on another network?

A. application
B. session
C. transport
D. network
E. data link
F. physical

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
Only network address contains this information. To transmit the packets the sender uses network address and datalink address. But the layer 2 address represents just the address of the next hop device on the way to the sender. It is changed on each hop. Network address remains the same.

QUESTION 4
Which layer of the TCP/IP stack combines the OSI model physical and data link layers?

A. Internet layer
B. transport layer
C. application layer
D. network access layer

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
The Internet Protocol Suite, TCP/IP, is a suite of protocols used for communication over the internet. The TCP/IP model was created after the OSI 7 layer model for two major reasons. First, the foundation of the Internet was built using the TCP/IP suite and through the spread of the World Wide Web and Internet, TCP/IP has been preferred. Second, a project researched by the Department of Defense (DOD) consisted of creating the TCP/IP protocols. The DOD's goal was to bring international standards which could not be met by the OSI model. Since the DOD was the largest software consumer and they preferred the TCP/IP suite, most vendors used this model rather then the OSI. Below is a side by side comparison of the TCP/IP and OSI models.

TCP/IP Model
VS.

OSI Model
Application
Layer 7
Application
Layer 6
Presentation
Layer 5
Session
Transport
Layer 4
Transport
Internet
Layer 3
Network
Network Access
Layer 2
Data Link
Layer 1
Physical

QUESTION 5
Which protocol uses a connection-oriented service to deliver files between end systems?

A. TFTP

B. DNS

C. FTP

D. SNMP
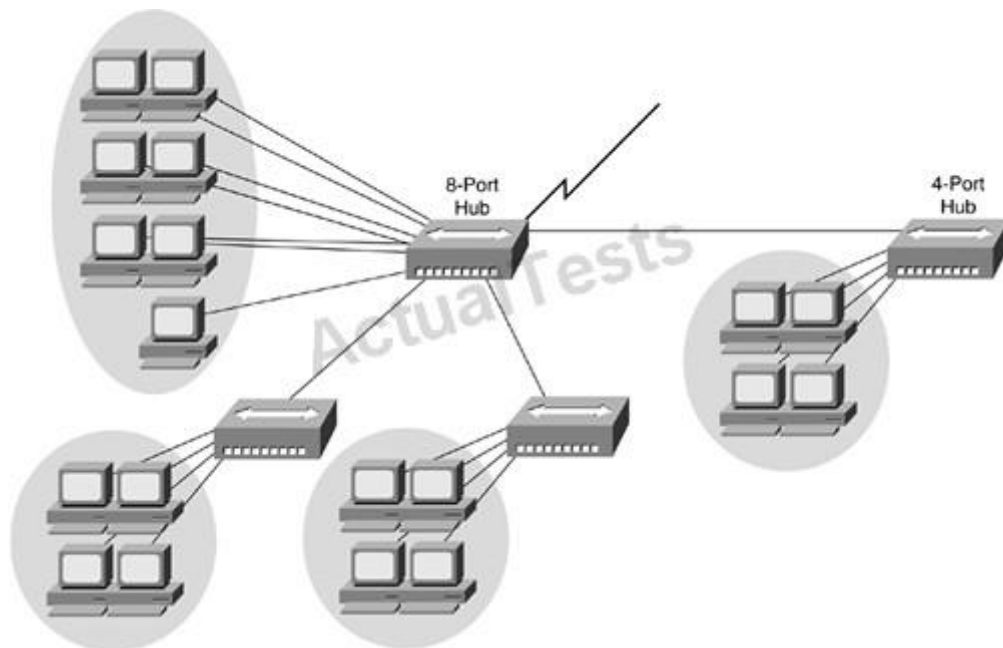
E. RIP

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
FTP is an acronym for File Transfer Protocol. As the name suggests, FTP is used to transfer files between computers on a network. You can use FTP to exchange files between computer accounts, transfer files between an account and a desktop computer, or access online software archives

QUESTION 6
Refer to the exhibit.

If the hubs in the graphic were replaced by switches, what would be virtually eliminated?

A. broadcast domains
B. repeater domains
C. Ethernet collisions
D. signal amplification
E. Ethernet broadcasts
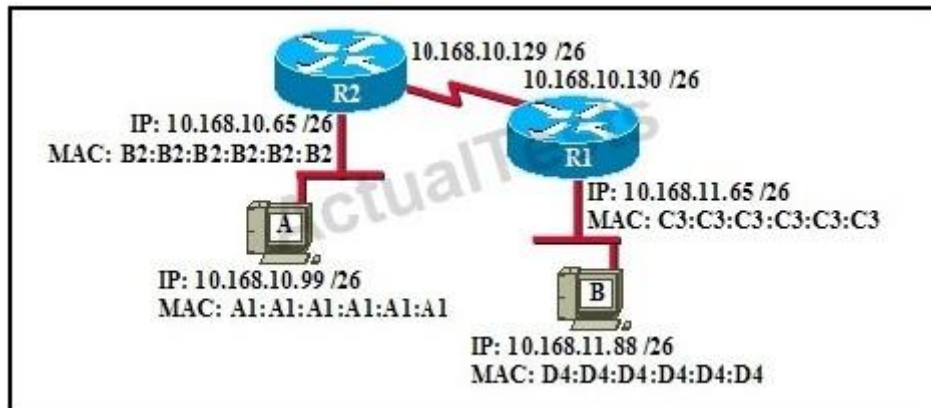
Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
Modern wired networks use a network switch to eliminate collisions. By connecting each device directly to a port on the switch, either each port on a switch becomes its own collision domain (in the case of half duplex links) or the possibility of collisions is eliminated entirely in the case of full duplex links.

QUESTION 7
Refer to the exhibit.

If host A sends an IP packet to host B, what will the source physical address be in the frame when it reaches host B?

A. 10.168.10.99
B. 10.168.11.88
C. A1:A1:A1:A1:A1:A1
D. B2:B2:B2:B2:B2:B2
E. C3:C3:C3:C3:C3:C3
F. D4:D4:D4:D4:D4:D4
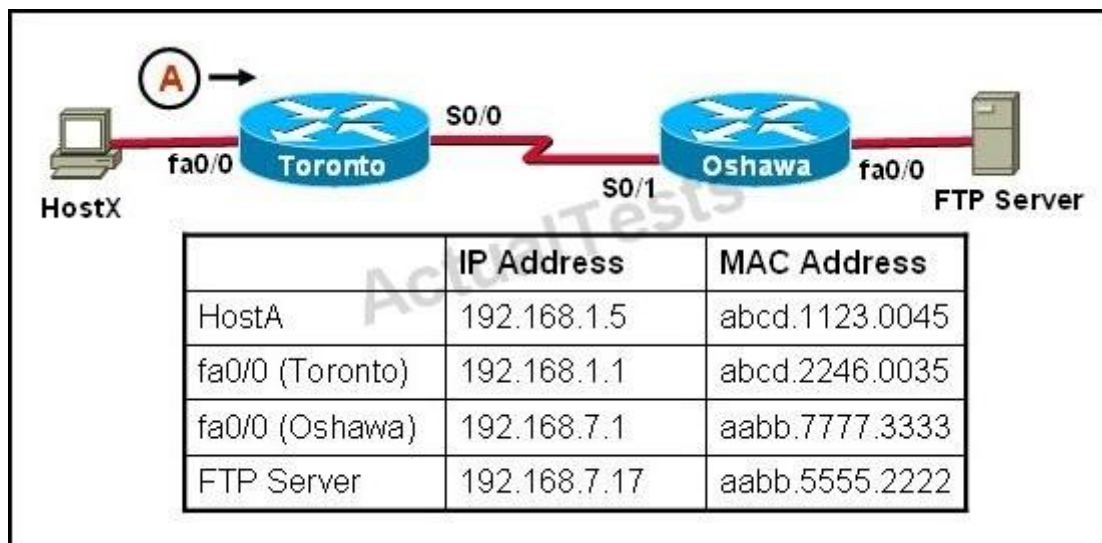
Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
When packets transfer from one host to another across a routed segment, the source IP address always remains the same source IP address, and the source physical (MAC) address will be the existing router's interface address. Similarly, the destination IP address always remains the same and the destination physical (MAC) address is the destination router's interface address.

QUESTION 8
Refer to the exhibit.

HostX is transferring a file to the FTP server. Point A represents the frame as it goes toward the Toronto router. What will the Layer 2 destination address be at this point?

A. abcd.1123.0045
B. 192.168.7.17
C. aabb.5555.2222
D. 192.168.1.1
E. abcd.2246.0035

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
For packets destined to a host on another IP network, the destination MAC address will be the LAN interface of the router. Since the FTP server lies on a different network, the host will know to send the frame to its default gateway, which is Toronto.

QUESTION 9
Which network device functions only at Layer 1 of the OSI model?

A) bridge

B) hub

C) NIC

D) router

E) switch

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

E. Option E

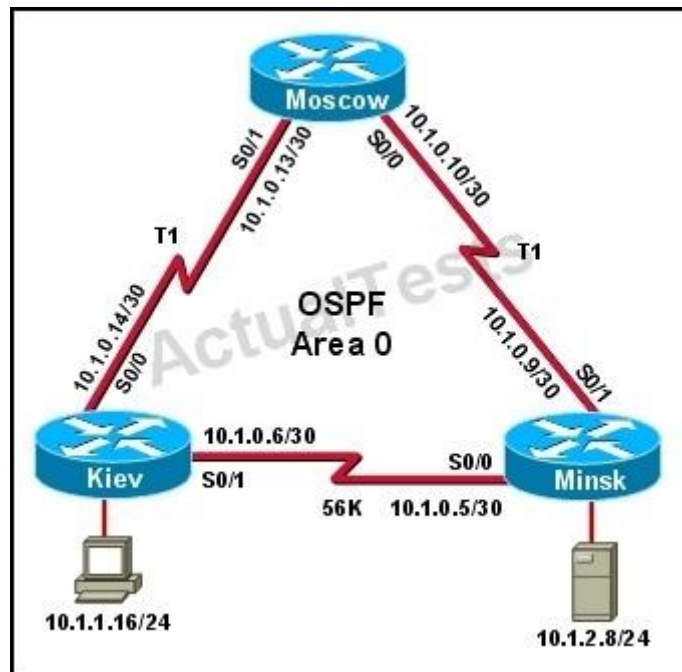**Correct Answer:** B
Section: (none)
Explanation

Explanation/Reference:
Most hubs are amplifying the electrical signal; therefore, they are really repeaters with several ports. Hubs and repeaters are Layer 1 (physical layer) devices.

QUESTION 10
Refer to the exhibit.

The host in Kiev sends a request for an HTML document to the server in Minsk. What will be the source IP address of the packet as it leaves the Kiev router?

A. 10.1.0.1
B. 10.1.0.5
C. 10.1.0.6

D. 10.1.0.14

E. 10.1.1.16

F. 10.1.2.8

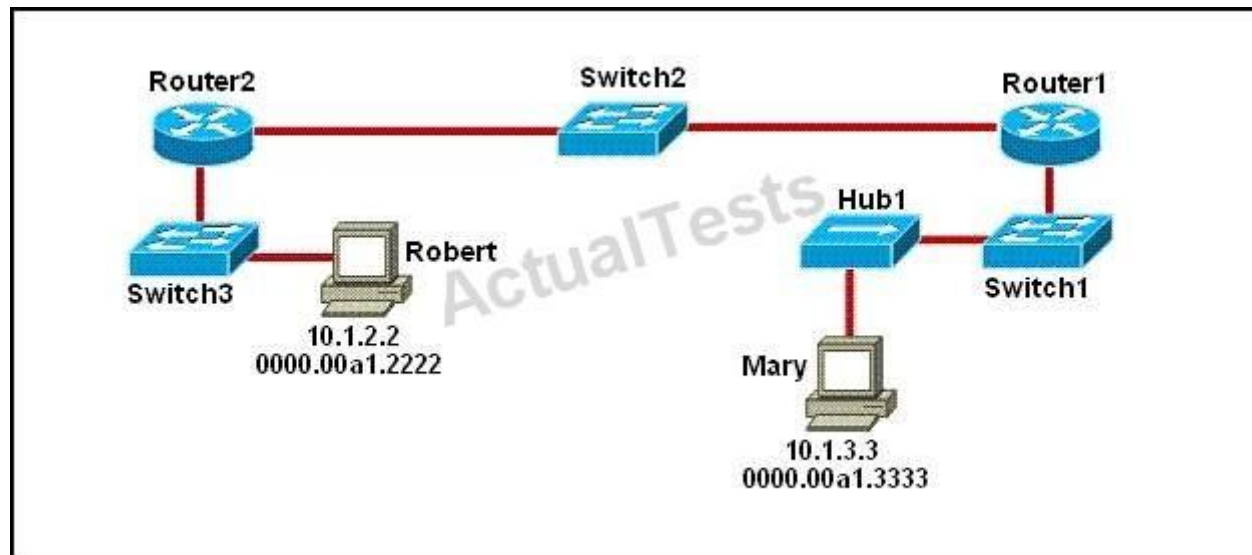**Correct Answer:** E
Section: (none)
Explanation

Explanation/Reference:
Although the source and destination MAC address will change as a packet traverses a network, the source and destination IP address will not unless network address translation (NAT) is being done, which is not the case here.

QUESTION 11
Refer to the exhibit.

As packets travel from Mary to Robert, which three devices will use the destination MAC address of the packet to determine a forwarding path? (Choose three.)

A. Hub1

B. Switch1

C. Router1

D. Switch2

E. Router2

F. Switch3

Correct Answer: BDF
Section: (none)
Explanation

Explanation/Reference:
Switches use the destination MAC address information for forwarding traffic, while routers use the destination IP address information.
Local Area Networks employ Layer 2 Switches and Bridges to forward and filter network traffic. Switches and Bridges operate at the Data Link Layer of the Open System Interconnect Model (OSI). Since Switches and Bridges operate at the Layer 2 they operate more intelligently than hubs, which work at Layer 1 (Physical Layer) of the OSI. Because the switches and bridges are able to listen to the traffic on the wire to examine the source and destination MAC address. Being able to listen to the traffic also allows the switches and bridges to compile a MAC address table to better filter and forward network traffic.
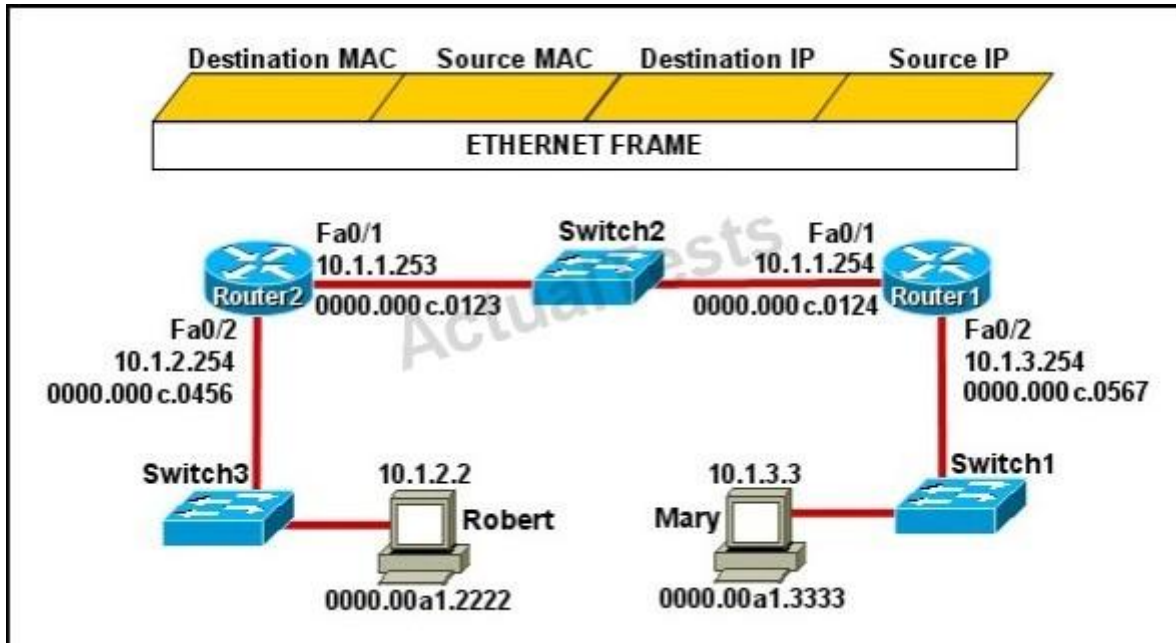To accomplish the above functions switches and bridges carry out the following tasks:
MAC address learning by a switch or a bridge is accomplished by the same method. The switch or bridge listens to each device connected to each of its ports and scan the incoming frame for the source MAC address. This creates a MAC address to port map that is cataloged in the switches/bridge MAC database. Another name for the MAC address table is content addressable memory orCAM table.
When a switch or bridge is listening o the network traffic, it receives each frame and compares it to the MAC address table. By checking the MAC table the switch/ bridge are able o determine which port the frame came in on. If the frame is on the MAC table the frame is filtered or transmitted on only that port. If the switch determines that the frame is not on the MAC table, the frame is forwarded out to all ports except the incoming port.

QUESTION 12
Refer to the exhibit.

Destination MAC	Source MAC	Destination IP	Source IP

ETHERNET FRAME

Mary is sending an instant message to Robert. The message will be broken into a series of packets that will traverse all network devices. What addresses will populate these packets as they are forwarded from Router1 to Router2?

A.

Destination MAC	Source MAC	Destination IP	Source IP
0000.00a1.2222	0000.00a1.3333	10.1.2.2	10.1.3.3

B.

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0123	0000.000c.0124	10.1.2.2	10.1.3.3

C.

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0123	0000.000c.0124	10.1.1.253	10.1.1.254

D.

Destination MAC	Source MAC	Destination IP	Source IP
0000.00a1.2222	0000.00a1.3333	10.1.1.253	10.1.1.254

E.

Destination MAC	Source MAC	Destination IP	Source IP
0000.000c.0456	0000.000c.0567	10.1.2.2	10.1.3.3

A. Option A
B. Option B
C. Option C
D. Option D
E. Option E

Correct Answer: B
Section: (none)

Explanation

Explanation/Reference:
The Source and Destination IP address is not going to change. Host 1 IP address will stay as being the source IP and the Host 2 IP address will stay the destination IP address. Those two are not going to change.
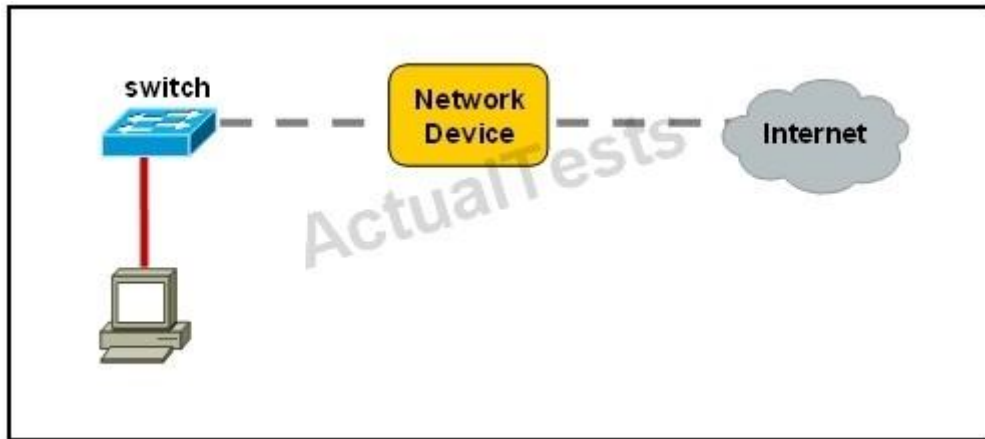For the MAC address it is going to change each time it goes from one hope to another. (Except switches... they don't change anything)
Frame leaving HOST 1 is going to have a source MAC of Host 1 and a destination MAC of Router 1.
Router 1 is going to strip that info off and then will make the source MAC address of Router1's exiting interface, and making Router2's interface as the destination MAC address. Then the same will happen... Router2 is going to change the source/destination info to the source MAC being the Router2 interface that it is going out, and the destination will be Host2's MAC address.

QUESTION 13
Refer to the exhibit.

A network device needs to be installed in the place of the icon labeled Network Device to accommodate a leased line attachment to the Internet. Which network device and interface configuration meets the minimum requirements for this installation?

A. a router with two Ethernet interfaces
B. a switch with two Ethernet interfaces
C. a router with one Ethernet and one serial interface
D. a switch with one Ethernet and one serial interface
E. a router with one Ethernet and one modem interface

Correct Answer: C

Section: (none)
Explanation

Explanation/Reference:
Only a router can terminate a leased line attachment access circuit, and only a router can connect two different IP networks. Here, we will need a router with two interfaces, one serial connection for the line attachment and one Ethernet interface to connect to the switch on the LAN.

QUESTION 14
Which transport layer protocol provides best-effort delivery service with no acknowledgment receipt required?

A. HTTP
B. IP
C. TCP
D. Telnet
E. UDP

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
UDP provides a connectionless datagram service that offers best-effort delivery, which means that UDP does not guarantee delivery or verify sequencing for any datagrams. A source host that needs reliable communication must use either TCP or a program that provides its own sequencing and acknowledgment services.

QUESTION 15
Which layer of the OSI model controls the reliability of communications between network devices using flow control, sequencing and acknowledgments?

A. Physical
B. Data-link
C. Transport
D. Network

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
There are many services that can be optionally provided by a transport-layer protocol, and different protocols may or may not implement them.
Connection-oriented communication: It is normally easier for an application to interpret a connection as a data stream rather than having to deal with the underlying

connection-less models, such as the datagram model of the User Datagram Protocol (UDP) and of the Internet Protocol (IP).
Byte orientation: Rather than processing the messages in the underlying communication system format, it is often easier for an application to process the data stream as a sequence of bytes. This simplification helps applications work with various underlying message formats. Same order delivery: The network layer doesn't generally guarantee that packets of data will arrive in the same order that they were sent, but often this is a desirable feature. This is usually done through the use of segment numbering, with the receiver passing them to the application in order.
This can cause head-of-line blocking.
Reliability: Packets may be lost during transport due to network congestion and errors. By means of an error detection code, such as a checksum, the transport protocol may check that the data is not corrupted, and verify correct receipt by sending an ACK or NACK message to the sender. Automatic repeat request schemes may be used to retransmit lost or corrupted data. Flow control: The rate of data transmission between two nodes must sometimes be managed to prevent a fast sender from transmitting more data than can be supported by the receiving data buffer, causing a buffer overrun. This can also be used to improve efficiency by reducing buffer underrun.
Congestion avoidance: Congestion control can control traffic entry into a telecommunications network, so as to avoid congestive collapse by attempting to avoid oversubscription of any of the processing or link capabilities of the intermediate nodes and networks and taking resource reducing steps, such as reducing the rate of sending packets. For example, automatic repeat requests may keep the network in a congested state; this situation can be avoided by adding congestion avoidance to the flow control, including slow-start. This keeps the bandwidth consumption at a low level in the beginning of the transmission, or after packet retransmission. Multiplexing: Ports can provide multiple endpoints on a single node. For example, the name on a postal address is a kind of multiplexing, and distinguishes between different recipients of the same location. Computer applications will each listen for information on their own ports, which enables the use of more than one network service at the same time. It is part of the transport layer in the TCP/IP model, but of the session layer in the OSI model.

QUESTION 16
Which statements are true regarding ICMP packets? (Choose two.)

A. They acknowledge receipt of TCP segments.

B. They guarantee datagram delivery.

C. TRACERT uses ICMP packets.

D. They are encapsulated within IP datagrams.

E. They are encapsulated within UDP datagrams.

Correct Answer: CD
Section: (none)
Explanation

Explanation/Reference:
Ping may be used to find out whether the local machines are connected to the network or whether a remote site is reachable. This tool is a common network tool for determining the network connectivity which uses ICMP protocol instead of TCP/IP and UDP/IP. This protocol is usually associated with the network management tools which provide network information to network administrators, such as ping and traceroute (the later also uses the UDP/IP protocol). ICMP is quite different from the TCP/IP and UDP/IP protocols. No source and destination ports are included in its packets. Therefore, usual packet-filtering rules for TCP/IP and UDP/IP are not applicable. Fortunately, a special "signature" known as the packet's Message type is included for denoting the purposes of the ICMP packet. Most commonly used message types are namely, 0, 3, 4, 5, 8, 11, and 12 which represent echo reply, destination unreachable, source quench, redirect, echo request, time exceeded, and parameter problem respectively. In the ping service, after receiving the ICMP "echo request" packet from the source location, the destination

QUESTION 17
Which statements accurately describe CDP? (Choose three.)

A. CDP is an IEEE standard protocol.
B. CDP is a Cisco proprietary protocol.
C. CDP is a datalink layer protocol.
D. CDP is a network layer protocol.
E. CDP can discover directly connected neighboring Cisco devices.
F. CDP can discover Cisco devices that are not directly connected.

Correct Answer: BCE
Section: (none)
Explanation

Explanation/Reference:
CDP (Cisco Discovery Protocol) is a proprietary protocol designed by Cisco to help administrators collect information about both locally attached and remote devices. By using CDP, you can gather hardware and protocol information about neighbor devices containing useful info for troubleshooting and documenting the network.

QUESTION 18
How does a switch differ from a hub?

A. A switch does not induce any latency into the frame transfer time.
B. A switch tracks MAC addresses of directly-connected devices.
C. A switch operates at a lower, more efficient layer of the OSI model.
D. A switch decreases the number of broadcast domains.
E. A switch decreases the number of collision domains.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Some of the features and functions of a switch include:
A switch is essentially a fast, multi-port bridge, which can contain dozens of ports. Rather than creating two collision domains, each port creates its own collision domain. In a network of twenty nodes, twenty collision domains exist if each node is plugged into its own switch port.
If an uplink port is included, one switch creates twenty-one single-node collision domains. A switch dynamically builds and maintains a Content-Addressable Memory (CAM) table, holding all of the necessary MAC information for each port.

For a detailed description of how switches operate, and their key differences to hubs, see the reference link below.

Reference: http://www.cisco.com/warp/public/473/lan-switch-cisco.shtml

QUESTION 19
What must occur before a workstation can exchange HTTP packets with a web server?

A. A UDP connection must be established between the workstation and its default gateway.
B. A UDP connection must be established between the workstation and the web server.
C. A TCP connection must be established between the workstation and its default gateway.
D. A TCP connection must be established between the workstation and the web server.
E. An ICMP connection must be established between the workstation and its default gateway.
F. An ICMP connection must be established between the workstation and the web server.

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
HTTP uses TCP port 80.

QUESTION 20
How does TCP differ from UDP? (Choose two.)

A. TCP provides best effort delivery.
B. TCP provides synchronized communication.
C. TCP segments are essentially datagrams.
D. TCP provides sequence numbering of packets.
E. TCP uses broadcast delivery.

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
TCP differs from UDP in the following ways:
TCP provides best effort delivery.
TCP provides synchronized communication.
TCP segments are essentially datagrams.

TCP provides sequence numbering of packets.
TCP uses broadcast delivery.

QUESTION 21
A workstation has just resolved a browser URL to the IP address of a server. What protocol will the workstation now use to determine the destination MAC address to be placed into frames directed toward the server?

A. HTTP

B. DNS

C. DHCP

D. RARP

E. ARP

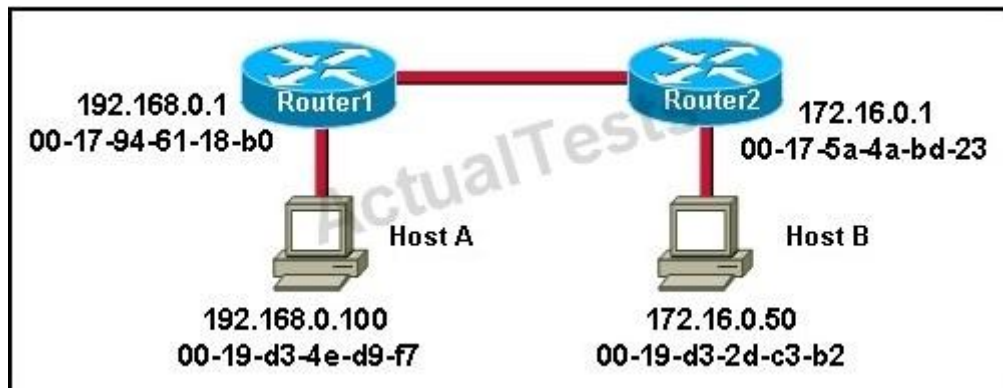**Correct Answer:** E
Section: (none)
Explanation

Explanation/Reference:
The RARP protocol is used to translate hardware interface addresses to protocol addresses. The RARP message format is very similar to the ARP format. When the booting computer sends the broadcast ARP request, it places its own hardware address in both the sending and receiving fields in the encapsulated ARP data packet. The RARP server will fill in the correct sending and receiving IP addresses in its response to the message. This way the booting computer will know its IP address when it gets the message from the RARP server

QUESTION 22
Refer to the exhibit.

Host A is sending a packet to Host B for the first time. What destination MAC address will Host A use in the ARP request?

A. 192.168.0.1
B. 172.16.0.50
C. 00-17-94-61-18-b0
D. 00-19-d3-2d-c3-b2
E. ff-ff-ff-ff-ff-ff
F. 255.255.255.255

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
For the initial communication, Host A will send a broadcast ARP (all F's) to determine the correct address to use to reach the destination.

QUESTION 23
What are two common TCP applications? (Choose two.)

A. TFTP
B. SMTP
C. SNMP
D. FTP
E. DNS

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
SMTP uses TCP port 25, while FTP uses TCP ports 20 and 21.

QUESTION 24
Refer to the exhibit.

```
SwitchA# show mac-address-table
< non-essential output omitted >

    Destination Address  Address Type  VLAN  Destination Port

    ------------------   -----------   ----  -------------------
    00b0.d056.fe4d       Dynamic       1     FastEthernet0/3
    00b0.d043.ac2e       Dynamic       1     FastEthernet0/4
    00b0.d0fe.ac32       Dynamic       1     FastEthernet0/5
    00b0.d0da.cb56       Dynamic       1     FastEthernet0/6
```

Frame received by SwitchA:

Source MAC	Destination MAC	Source IP	Destination IP
00b0.d056.fe4d	00b0.d0da.cb56	192.168.40.5	192.168.40.6

SwitchA receives the frame with the addressing shown. According to the command output also shown in the exhibit, how will SwitchA handle this frame?

A. It will drop the frame.
B. It will forward the frame out port Fa0/6 only.
C. It will flood the frame out all ports.
D. It will flood the frame out all ports except Fa0/3.

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
Switches learn the MAC addresses of PCs or workstations that are connected to their switch ports by examining the source address of frames that are received on that port. Machines may have been removed from a port, turned off, or moved to another port on the same switch or a different switch.
This could cause confusion in frame forwarding.
The MAC address entry is automatically discarded or aged out after 300 seconds If there is not MAC address of destination host in MAC table, switch sends broadcast to all ports except the source to find out the destination host.

QUESTION 25

Refer to the exhibit.

```
SwitchA# show mac-address-table
< non-essential output omitted >
        Destination Address  Address Type  VLAN  Destination Port

        ------------------   -----------   ----  ------------------
        00b0.d056.fe4d       Dynamic        1    FastEthernet0/3
        00b0.d043.ac2e       Dynamic        1    FastEthernet0/4
        00b0.d0fe.ac32       Dynamic        1    FastEthernet0/5
        00b0.d0da.cb56       Dynamic        1    FastEthernet0/6
```

Frame received by SwitchA:

Source MAC	Destination MAC	Source IP	Destination IP
00b0.d056.fe4d	00b0.d0da.895a	192.168.40.5	192.168.40.6

SwitchA receives the frame with the addressing shown in the exhibit. According to the command output also shown in the exhibit, how will SwitchA handle this frame?

A. It will drop the frame.
B. It will forward the frame out port Fa0/6 only.
C. It will forward the frame out port Fa0/3 only.
D. It will flood the frame out all ports.
E. It will flood the frame out all ports except Fa0/3.

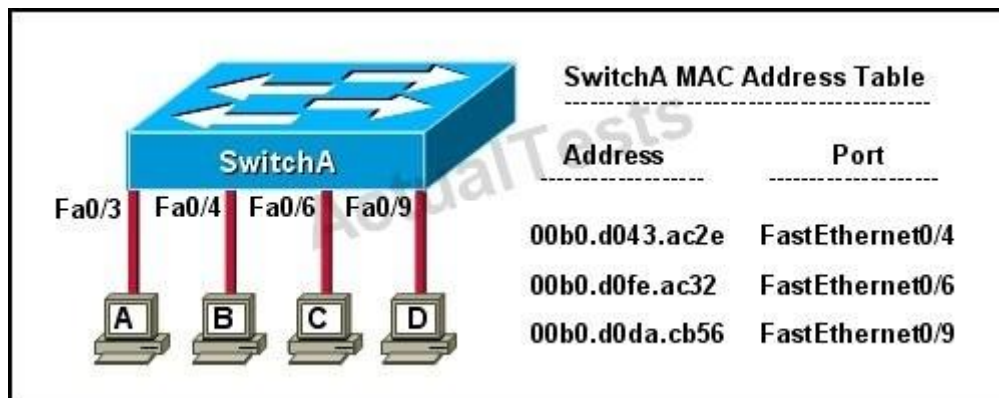**Correct Answer:** E
Section: (none)
Explanation

Explanation/Reference:
When frame receives the frame, it checks the source address on MAC table if MAC address found in MAC table it tries to forward if not in MAC table adds the Address on MAC table. After checking the source address, it checks the destination address on MAC table, if MAC address found on MAC table it forwards to proper ports otherwise floods on all ports except the source port.

QUESTION 26
Refer to the exhibit.

The exhibit is showing the topology and the MAC address table. Host A sends a data frame to host D. What will the switch do when it receives the frame from host A?

A. The switch will add the source address and port to the MAC address table and forward the frame to host D.
B. The switch will discard the frame and send an error message back to host A.
C. The switch will flood the frame out of all ports except for port Fa0/3.
D. The switch will add the destination address of the frame to the MAC address table and forward the frame to host D.

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
When switch receives the data frame from the host not having the MAC address already on the MAC table, it will add the MAC address to source port on MAC address table and sends the data frame.

QUESTION 27
Which two statements describe the operation of the CSMA/CD access method? (Choose two.)

A. In a CSMA/CD collision domain, multiple stations can successfully transmit data simultaneously.
B. In a CSMA/CD collision domain, stations must wait until the media is not in use before transmitting.
C. The use of hubs to enlarge the size of collision domains is one way to improve the operation of the CSMA/CD access method.

D. After a collision, the station that detected the collision has first priority to resend the lost data.

E. After a collision, all stations run a random backoff algorithm. When the backoff delay period has expired, all stations have equal priority to transmit data.

F. After a collision, all stations involved run an identical backoff algorithm and then synchronize with each other prior to transmitting data.
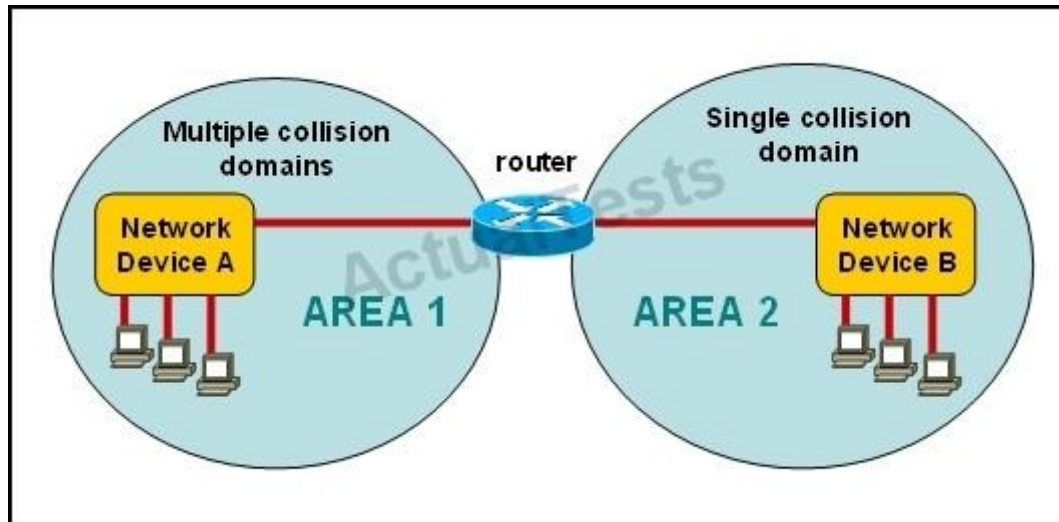
Correct Answer: BE
Section: (none)
Explanation

Explanation/Reference:
Ethernet networking uses Carrier Sense Multiple Access with Collision Detect (CSMA/CD), a protocol that helps devices share the bandwidth evenly without having two devices transmit at the same time on the network medium. CSMA/CD was created to overcome the problem of those collisions that occur when packets are transmitted simultaneously from different nodes. And trust me, good collision management is crucial, because when a node transmits in a CSMA/CD network, all the other nodes on the network receive and examine that transmission. Only bridges and routers can effectively prevent a transmission from propagating throughout the entire network! So, how does the CSMA/CD protocol work? Like this: when a host wants to transmit over the network, it first checks for the presence of a digital signal on the wire. If all is clear (no other host is transmitting), the host will then proceed with its transmission. But it doesn't stop there. The transmitting host constantly monitors the wire to make sure no other hosts begin transmitting. If the host detects another signal on the wire, it sends out an extended jam signal that causes all nodes on the segment to stop sending data (think, busy signal). The nodes respond to that jam signal by waiting a while before attempting to transmit again. Backoff algorithms determine when the colliding stations can retransmit. If collisions keep occurring after 15 tries, the nodes attempting to transmit will then time out.

QUESTION 28
Refer to the exhibit.

A network has been planned as shown. Which three statements accurately describe the areas and devices in the network plan? (Choose three.)

A. Network Device A is a switch.
B. Network Device B is a switch.
C. Network Device A is a hub.
D. Network Device B is a hub.
E. Area 1 contains a Layer 2 device.
F. Area 2 contains a Layer 2 device.

Correct Answer: ADE
Section: (none)
Explanation

Explanation/Reference:
Switches use a separate collision domain for each port, so device A must be a switch. Hubs, however, place all ports in the same collision domain so device B is a hub. Switches reside in layer 2 while hubs are layer 1 devices.

QUESTION 29
On a Cisco switch, which protocol determines if an attached VoIP phone is from Cisco or from another vendor?

A. RTP
B. TCP
C. CDP
D. UDP

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
The Cisco Unified IP Phone uses CDP to communicate information such as auxiliary VLAN ID, per port power management details, and Quality of Service (QoS) configuration information with the Cisco Catalyst switch.

QUESTION 30
Refer to the exhibit.

What must be configured to establish a successful connection from Host A to switch SW-A through router RT-A?

A. VLAN 1 on RT-A
B. IP routing on SW-A
C. default gateway on SW-A
D. crossover cable connecting SW-A and RT-A

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
In order for the switch to reach networks that are not local, such as networks attached to different interfaces of the router, it will need to set its default gateway to be the IP address of the attached router.

QUESTION 31
At which layer of the OSI model does the protocol that provides the information that is displayed by the show cdp neighbors command operate?

A. application
B. transport
C. network
D. physical
E. data link

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:

CDP is a device discovery protocol that runs over Layer 2 (the data link layer) on all Cisco- manufactured devices (routers, bridges, access servers, and switches) and allows network management applications to discover Cisco devices that are neighbors of already known devices. With CDP, network management applications can learn the device type and the Simple Network Management Protocol (SNMP) agent address of neighboring devices running lower-layer, transparent protocols.

QUESTION 32
Which two characteristics apply to Layer 2 switches? (Choose two.)

A. increases the number of collision domains
B. decreases the number of collision domains
C. implements VLAN
D. decreases the number of broadcast domains
E. uses the IP address to make decisions for forwarding data packets

Correct Answer: AC
Section: (none)
Explanation

Explanation/Reference:
Layer 2 switches offer a number of benefits to hubs, such as the use of VLANs and each switch port is in its own separate collision domain, thus eliminating collisions on the segment.

QUESTION 33
Which two characteristics describe the access layer of the hierarchical network design model? (Choose two.)

A. layer 3 support
B. port security
C. redundant components
D. VLANs
E. PoE

Correct Answer: AB
Section: (none)
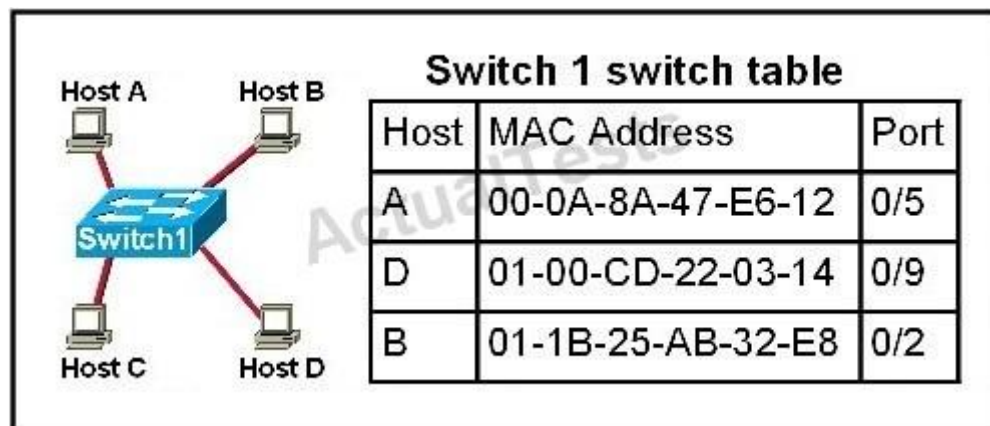**Explanation**

Explanation/Reference:
2. Benefits of a Hierarchical Network
Scalability: The modularity of the design of hierarchical networks allows you to replicate design elements as the network grows including the use of layer 3 support on network swithces. Because each instance of the module is consistent, expansion is easy to plan and implement. Redundancy: Redundancy at the core and distribution layers ensures path availability in case of any hardware failure in any of the devices on these layers. Performance: Link aggregation between levels and

high-performance core and distribution level switches allows for near wire speed throughout the network. Properly designed hierarchical networks can achieve near wire speed between all devices. Security: Port security at the access level, and policies at the distribution layer make the network more secure. is important to keep the core layer free from any tasks that may compromise the speed of the link, all security should be handled at the access and distrubution layers. Manageability: Consistency between switches at each level makes management more simple. Each layer of the hierarchical design performs specific functions that are consistent throughout that layer. Therefore, if you need to change the functionality of an access layer switch, you could repeat that change across all access layer switches in the network because they presumably perform the same functions at their layer.

Maintainability: Because hierarchical networks are modular in nature and scale very easily, they are easy to maintain. With other network topology designs, manageability becomes increasingly complicated as the network grows. In the hierarchical model, switch functions are different at each layer. You can save money by using less expensive access layer switches at the lowest layer, and spend more on the distribution and core layer switches to achieve high performance on the network.

QUESTION 34
Refer to the topology and switching table shown in the graphic.

Host B sends a frame to Host C. What will the switch do with the frame?

A. drop the frame
B. send the frame out all ports except port 0/2
C. return the frame to Host B
D. send an ARP request for Host C
E. send an ICMP Host Unreachable message to Host B
F. record the destination MAC address in the switching table and send the frame directly to Host C

Correct Answer: B
Section: (none)

Explanation

Explanation/Reference:
An Ethernet switch appears to use the same logic as a transparent bridge. However, the internal logic of the switch is optimized for performing the basic function of choosing when to forward and when to filter a frame. Just as with a transparent bridge, the basic logic of a LAN switch is as follows:

Step 1   A frame is received.

Step 2   If the destination is a broadcast or multicast, forward on all ports.

Step 3   If the destination is a unicast and the address is not in the address table, forward on all ports.

Step 4   If the destination is a unicast and the address is in the address table, forward the frame out the associated port, unless the MAC address is associated with the incoming port.

Topic 2, LAN Switching Technologies

QUESTION 35
Which two options will help to solve the problem of a network that is suffering a broadcast storm? (Choose two.)

A. a bridge
B. a router
C. a hub
D. a Layer 3 switch
E. an access point

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
Routers and layer 3 switches will not propagate broadcast traffic beyond the local segment, so the use of these devices is the best method for eliminating broadcast storms.

QUESTION 36

A switch receives a frame on one of its ports. There is no entry in the MAC address table for the destination MAC address. What will the switch do with the frame?

A. drop the frame
B. forward it out of all ports except the one that received it
C. forward it out of all ports
D. store it until it learns the correct port

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Understanding this concept is prime for understanding that when switch receives the data frame from the host not having the MAC address already in the MAC table, it will add the MAC address to the source port on the MAC address table and sends the data frame. If the switch already has the MAC address in it's table for the destination, it will forward the frame directly to the destination port. If it was not already in it's MAC table, then they frame would have been flooded out all ports except for the port that it came from.

QUESTION 37
Which address type does a switch use to make selective forwarding decisions?

A. source IP address
B. destination IP address
C. source and destination IP address
D. source MAC address
E. destination MAC address
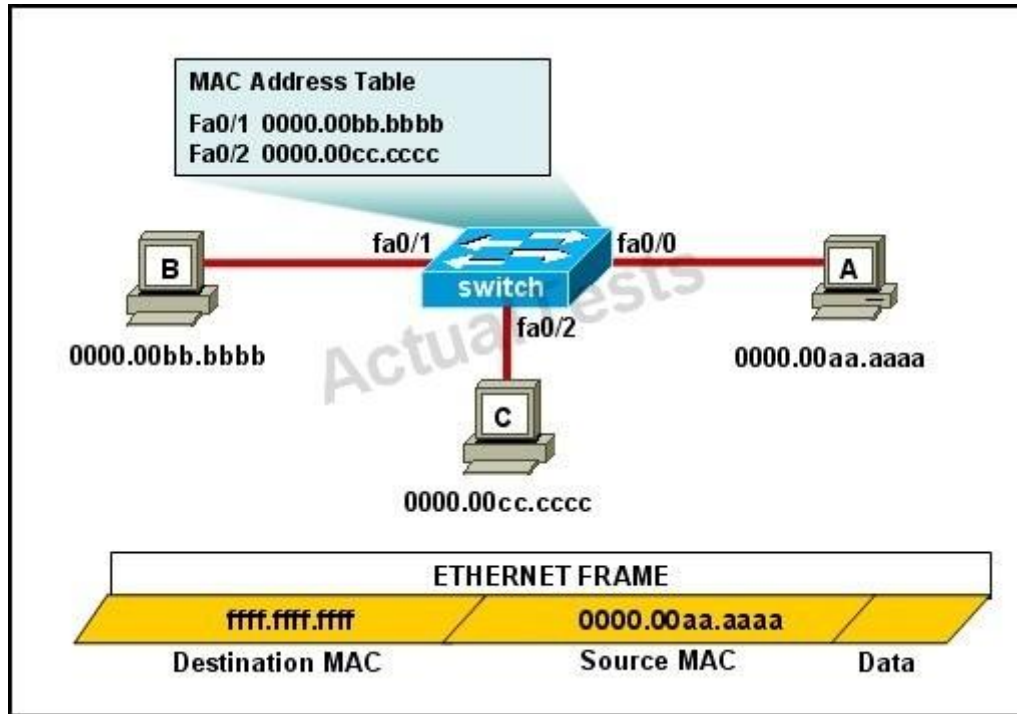
Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
Switches analyze the destination MAC to make its forwarding decision since it is a layer 2 device. Routers use the destination IP address to make forwarding decisions.

QUESTION 38
Refer to the exhibit.

The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch.

What two operations will the switch perform when it receives this frame? (Choose two.)

A. The switch will not forward a frame with this destination MAC address.
B. The MAC address of 0000.00aa.aaaa will be added to the MAC Address Table.
C. The MAC address of ffff.ffff.ffff will be added to the MAC address table.
D. The frame will be forwarded out all active switch ports except for port fa0/0.
E. The frame will be forwarded out fa0/0 and fa0/1 only.
F. The frame will be forwarded out all the ports on the switch.

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
If the switch already has the MAC address in its table for the destination, it will forward the frame directly to the destination port. If it was not already in its MAC table, then they frame would have been flooded out all ports except for the port that it came from.

QUESTION 39
What does a host on an Ethernet network do when it is creating a frame and it does not have the destination address?

A. drops the frame
B. sends out a Layer 3 broadcast message
C. sends a message to the router requesting the address
D. sends out an ARP request with the destination IP address

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
In this case, it will send out an ARP request for MAC address of the destination IP (assuming it doesn't already have it in its table) and then address it to the destination's MAC address.

QUESTION 40
A switch has 48 ports and 4 VLANs. How many collision and broadcast domains exist on the switch (collision, broadcast)?

A. 4, 48
B. 48, 4
C. 48, 1
D. 1, 48
E. 4, 1

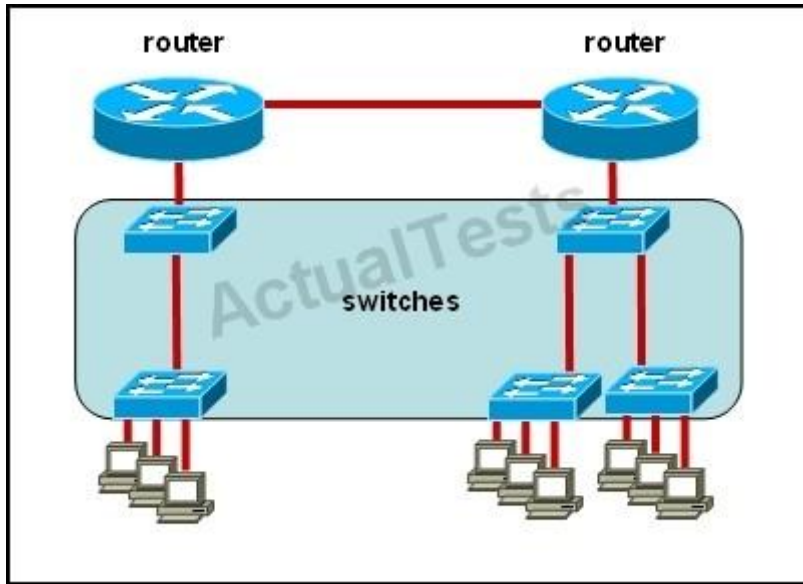**Correct Answer:** B
Section: (none)
Explanation

Explanation/Reference:
A switch uses a separate collision domain for each port, and each VLAN is a separate broadcast domain.

QUESTION 41
Refer to the exhibit.

All devices attached to the network are shown. How many collision domains are present in this network?

A. 2
B. 3
C. 6
D. 9
E. 15

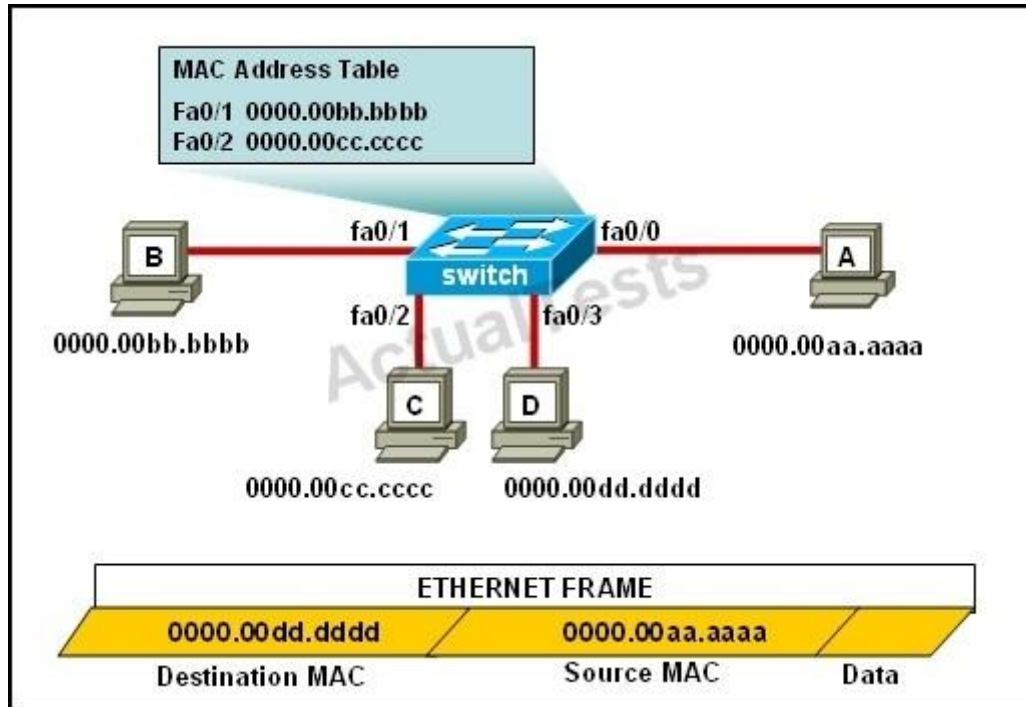**Correct Answer:** E
Section: (none)
Explanation

Explanation/Reference:
A switch uses a separate collision domain for each port so there are a total of 9 for each device shown. In addition to this, the switch to switch connections (3) are a separate collision domain. Finally, we add the switch to router connections (2) and the router to router connection (1) for a total of 15.

QUESTION 42
Refer to the exhibit.

The ports that are shown are the only active ports on the switch. The MAC address table is shown in its entirety. The Ethernet frame that is shown arrives at the switch.

What two operations will the switch perform when it receives this frame? (Choose two.)

A. The MAC address of 0000.00aa.aaaa will be added to the MAC address table.
B. The MAC address of 0000.00dd.dddd will be added to the MAC address table.
C. The frame will be forwarded out port fa0/3 only.
D. The frame will be forwarded out fa0/1, fa0/2, and fa0/3.
E. The frame will be forwarded out all the active ports.

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:

If the switch already has the MAC address in its table for the destination, it will forward the frame directly to the destination port. If it was not already in its MAC table, then they frame would have been flooded out all ports except for the port that it came from.It will also add the MAC address of the source device to its MAC address table Topic 3, IP addressing (IPv4 / IPv6)

QUESTION 43
Which IP addresses are valid for hosts belonging to the 10.1.160.0/20 subnet? (Choose three.)

A. 10.1.168.0
B. 10.1.176.1
C. 10.1.174.255
D. 10.1.160.255
E. 10.1.160.0
F. 10.1.175.255

Correct Answer: ACD
Section: (none)
Explanation

Explanation/Reference:
All IP address in IP ranges between : 10.1.160.1 and 10.1.175.254 are valid as shown below Address: 10.1.160.0 00001010.00000001.1010 0000.00000000
Netmask:255.255.240.0 = 2011111111.11111111.1111 0000.00000000 Wildcard:0.0.15.25500000000.00000000.0000 1111.11111111 Which implies that
Network: 10.1.160.0/20 00001010.00000001.1010 0000.00000000 HostMin:10.1.160.100001010.00000001.1010 0000.00000001
HostMax:10.1.175.25400001010.00000001.1010 1111.11111110 Broadcast:10.1.175.25500001010.00000001.1010 1111.11111111

QUESTION 44
Given an IP address of 192.168.1.42 255.255.255.248, what is the subnet address?

A. 192.168.1.8/29
B. 192.168.1.32/27
C. 192.168.1.40/29
D. 192.168.1.16/28
E. 192.168.1.48/29

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
248 mask uses 5 bits (1111 1000)

42 IP in binary is (0010 1010)
The base subnet therefore is the lowest binary value that can be written without changing the output of an AND operation of the subnet mask and IP ...
1111 1000 AND
0010 1010 equals
0010 1000 - which is .40
/24 is standard class C mask.
adding the 5 bits from the .248 mask gives /29

QUESTION 45
Refer to the exhibit.

Net bits	Subnet mask	total-addresses per subnet
/20	255.255.240.0	4096
/21	255.255.248.0	2048
/22	255.255.252.0	1024
/23	255.255.254.0	512
/24	255.255.255.0	256
/25	255.255.255.128	128
/26	255.255.255.192	64
/27	255.255.255.224	32
/28	255.255.255.240	16
/29	255.255.255.248	8
/30	255.255.255.252	4

The enterprise has decided to use the network address 172.16.0.0. The network administrator needs to design a classful addressing scheme to accommodate the three subnets, with 30, 40, and 50 hosts, as shown. What subnet mask would accommodate this network?

A. 255.255.255.192
B. 255.255.255.224

C. 255.255.255.240
D. 255.255.255.248
E. 255.255.255.252

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Subnet mask A i.e. 255.255.255.192 with CIDR of /26 which means 64 hosts per subnet which are sufficient to accommodate even the largest subnet of 50 hosts.

QUESTION 46
Which two statements describe the IP address 10.16.3.65/23? (Choose two.)

A. The subnet address is 10.16.3.0 255.255.254.0.
B. The lowest host address in the subnet is 10.16.2.1 255.255.254.0.
C. The last valid host address in the subnet is 10.16.2.254 255.255.254.0
D. The broadcast address of the subnet is 10.16.3.255 255.255.254.0.
E. The network is not subnetted.

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
The mask 255.255.254.0 (/23) used with a Class A address means that there are 15 subnet bits and 9 host bits. The block size in the third octet is 2 (256 - 254). So this makes the subnets in 0, 2, 4, 6, etc., all the way to 254. The host 10.16.3.65 is in the 2.0 subnet. The next subnet is 4.0, so the broadcast address for the 2.0 subnet is 3.255. The valid host addresses are 2.1 through 3.254

QUESTION 47
Given a Class C IP address subnetted with a /30 subnet mask, how many valid host IP addresses are available on each of the subnets?

A. 1
B. 2
C. 4
D. 8
E. 252
F. 254

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
/30 CIDR corresponds to mask 55.255.255.252 whose binary is 11111100 which means 6 subnet bits and 2 host bits which means 62 subnets and 2 hosts per subnet.

QUESTION 48
Which one of the following IP addresses is the last valid host in the subnet using mask 255.255.255.224?

A. 192.168.2.63
B. 192.168.2.62
C. 192.168.2.61
D. 192.168.2.60
E. 192.168.2.32

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
With the 224 there are 8 networks with increments of 32 One of these is 32 33 62 63 where 63 is broadcast so 62 is last valid host out of given choices.

QUESTION 49
What is the subnet address of 172.16.159.159/22?

A. 172.16.0.0
B. 172.16.128.0
C. 172.16.156.0
D. 172.16.159.0
E. 172.16.159.128
F. 172.16.192.0

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
Converting to binary format it comes to 11111111.11111111.11111100.00000000 or 255.255.252.0
Starting with 172.16.0.0 and having increment of 4 we get.

QUESTION 50
What is the subnet address for the IP address 172.19.20.23/28?

A. 172.19.20.0
B. 172.19.20.15
C. 172.19.20.16
D. 172.19.20.20
E. 172.19.20.32

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
Using same logic as in question 8 we get this answer

QUESTION 51
An administrator is working with the 192.168.4.0 network, which has been subnetted with a /26 mask. Which two addresses can be assigned to hosts within the same subnet? (Choose two.)

A. 192.168.4.61
B. 192.168.4.63
C. 192.168.4.67
D. 192.168.4.125
E. 192.168.4.128
F. 192.168.4.132

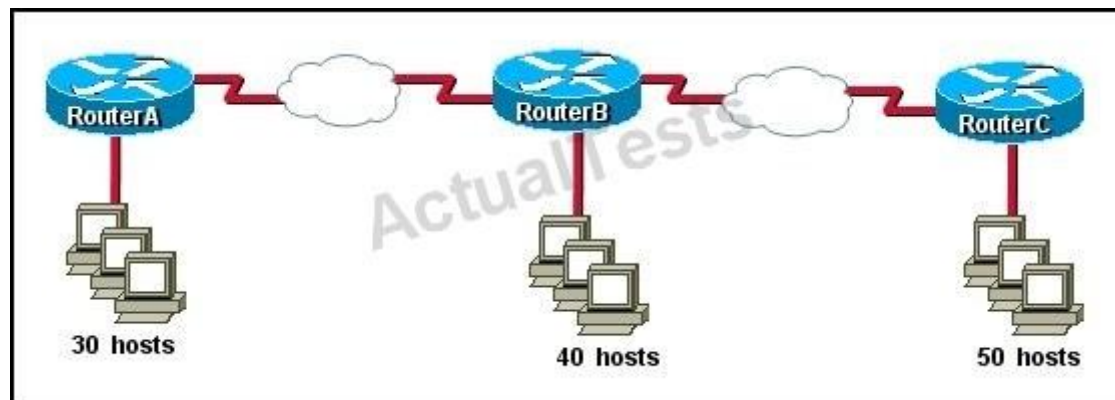**Correct Answer:** CD
Section: (none)
Explanation

Explanation/Reference:
Only the values of host with 67 and 125 fall within the range of /26 CIDR subnet mask, all others lie beyond it.

QUESTION 52

Refer to the exhibit.

The internetwork is using subnets of the address 192.168.1.0 with a subnet mask of 255.255.255.224. The routing protocol in use is RIP version 1. Which address could be assigned to the FastEthernet interface on RouterA?

A. 192.168.1.31
B. 192.168.1.64
C. 192.168.1.127
D. 192.168.1.190
E. 192.168.1.192

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

QUESTION 53
What is the network address for the host with IP address 192.168.23.61/28?

A. 192.168.23.0
B. 192.168.23.32
C. 192.168.23.48
D. 192.168.23.56

E. 192.168.23.60

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
convert bit-length prefix to quad-dotted decimal representation, then from it find the number of bits used for subnetting you can find previously calculated number of subnets by separating subnets each having value of last bit used for subnet masking
Find that your IP address is in which subnet, that subnet's first address is network address and last address is broadcast address.
Based on above steps the answer is option C

QUESTION 54
The network manager has requested a 300-workstation expansion of the network. The workstations are to be installed in a single broadcast domain, but each workstation must have its own collision domain. The expansion is to be as cost-effective as possible while still meeting the requirements.
Which three items will adequately fulfill the request? (Choose three).

A. one IP subnet with a mask of 255.255.254.0

B. two IP subnets with a mask of 255.255.255.0

C. seven 48-port hubs

D. seven 48-port switches

E. one router interface

F. seven router interfaces

Correct Answer: ADE
Section: (none)
Explanation

Explanation/Reference:
of 255.255.254.0 can absorb 510 hosts being 23 bits mask and also 7*48 port switches can handle this much hosts and router interface is required to be minimum to avoid unnecessary wastage hence the answers.

QUESTION 55
What is the purpose of assigning an IP address to a switch?

A. provides local hosts with a default gateway address

B. allows remote management of the switch

C. allows the switch to respond to ARP requests between two hosts

D. ensures that hosts on the same LAN can communicate with each other

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Switch is a layer 2 device and doesn't use network layer for packet forwarding. The IP address may be used only for administrative purposes such as Telnet access or for network management purposes.

Topic 4, IP Routing Technologies

QUESTION 56
What two things does a router do when it forwards a packet? (Choose two.)

A. switches the packet to the appropriate outgoing interfaces
B. computes the destination host address
C. determines the next hop on the path
D. updates the destination IP address
E. forwards ARP requests

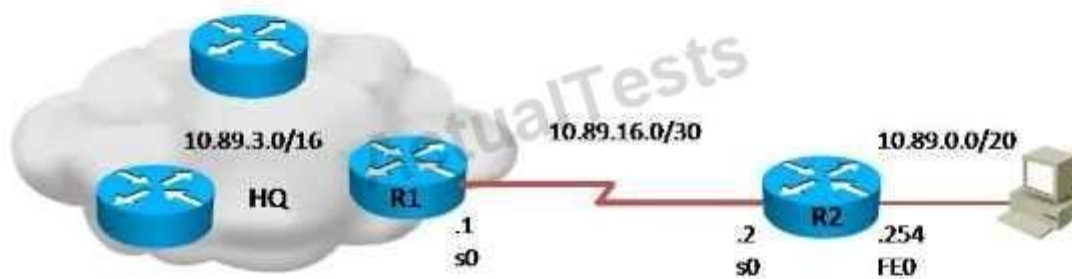**Correct Answer:** AC
Section: (none)
Explanation

Explanation/Reference:
Without following these two processes namely switching the packet to appropriate interface and telling the packet where to go by providing it with a destination IP address, the purpose of the same would not be solved.

QUESTION 57
Refer to the exhibit.

What is the simplest way to configure routing between the regional office network 10.89.0.0/20 and the corporate network?

A. router1(config)#ip route 10.89.0.0 255.255.240.0 10.89.16.2
B. router2(config)#ip route 10.89.3.0 255.255.0.0 10.89.16.2
C. router1(config)#ip route 10.89.0.0 255.255.240.0 10.89.16.1
D. router2(config)#ip route 0.0.0.0 0.0.0.0 10.89.16.1
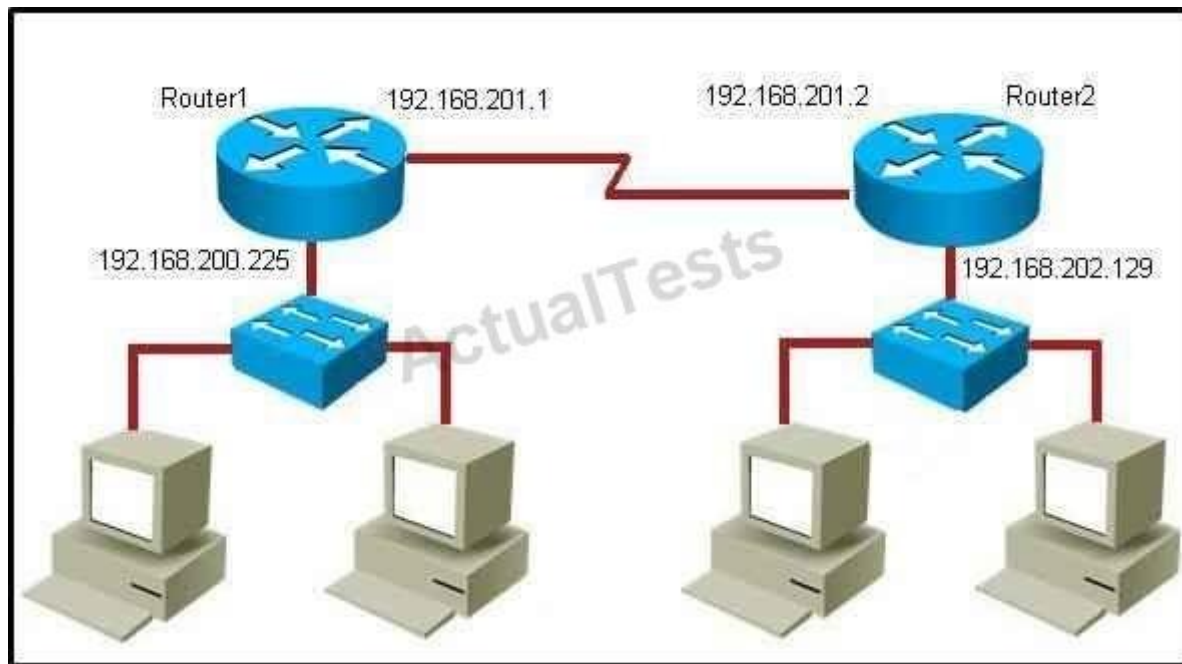
Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
The fourth command makes it possible for all hosts beyond R2 and all hosts beyond R1 to interact with each other, hence it is the most simplest technique.

QUESTION 58
Refer to the exhibit.

Which command would you use to configure a static route on Router1 to network 192.168.202.0/24 with a nondefault administrative distance?

A.   router1(config)#ip route 1 192.168.201.1 255.255.255.0 192.168.201.2
B.   router1(config)#ip route 192.168.202.0 255.255.255.0 192.168.201.2 1
C.   router1(config)#ip route 5 192.168.202.0 255.255.255.0 192.168.201.2
D.   router1(config)#ip route 192.168.202.0 255.255.255.0 192.168.201.2 5

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
Since it has /24 CIDR and it also has a non default administrative distance, the answer has to be option D.

QUESTION 59
What does administrative distance refer to?

A. the cost of a link between two neighboring routers
B. the advertised cost to reach a network
C. the cost to reach a network that is administratively set
D. a measure of the trustworthiness of a routing information source

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
Administrative distance is the first criterion that a router uses to determine which routing protocol to use if two protocols provide route information for the same destination. Administrative distance is a measure of the trustworthiness of the source of the routing information. The smaller the administrative distance value, the more reliable the protocol.

QUESTION 60
Which IOS command is used to initiate a login into a VTY port on a remote router?

A. router# login
B. router# telnet
C. router# trace
D. router# ping
E. router(config)# line vty 0 5
F. router(config-line)# login

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
VTY ports are telnet ports hence command B will initiate login to the telnet port.

QUESTION 61

The command ip route 192.168.100.160 255.255.255.224 192.168.10.2 was issued on a router. No routing protocols or other static routes are configured on the router. Which statement is true about this command?

A. The interface with IP address 192.168.10.2 is on this router.
B. The command sets a gateway of last resort for the router.
C. Packets that are destined for host 192.168.100.160 will be sent to 192.168.10.2.
D. The command creates a static route for all IP traffic with the source address 192.168.100.160.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
160 it's actually network address of /27 so any address within the range of 160 network will be sent to 192.168.10.2

QUESTION 62
Which two of these functions do routers perform on packets? (Choose two.)

A. Examine the Layer 2 headers of inbound packets and use that information to determine the next hops for the packets
B. Update the Layer 2 headers of outbound packets with the MAC addresses of the next hops
C. Examine the Layer 3 headers of inbound packets and use that information to determine the next hops for the packets
D. Examine the Layer 3 headers of inbound packets and use that information to determine the complete paths along which the packets will be routed to their ultimate destinations
E. Update the Layer 3 headers of outbound packets so that the packets are properly directed to valid next hops
F. Update the Layer 3 headers of outbound packets so that the packets are properly directed to their ultimate destinations

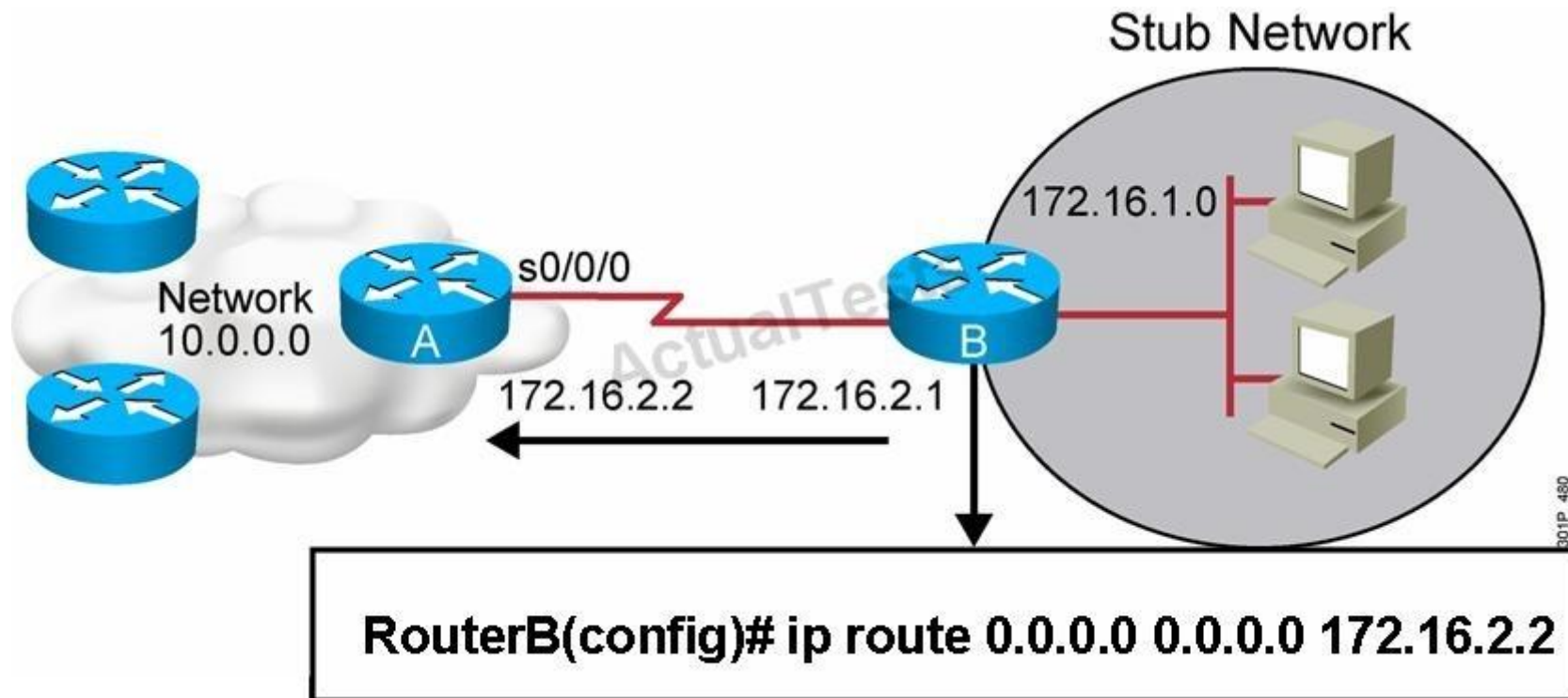**Correct Answer:** BC
Section: (none)
Explanation

Explanation/Reference:
This is the basic function of the router to receive incoming packets and then forward them to their required destination. This is done by reading layer 3 headers of inbound packets and update the info to layer 2 for further hopping.

QUESTION 63
Refer to the exhibit.

Stub Network

172.16.1.0

Network
10.0.0.0

s0/0/0

A

B

172.16.2.2   172.16.2.1

RouterB(config)# ip route 0.0.0.0 0.0.0.0 172.16.2.2

Which two statements are correct? (Choose two.)

A. This is a default route.
B. Adding the subnet mask is optional for the ip route command.
C. This will allow any host on the 172.16.1.0 network to reach all known destinations beyond RouterA.
D. This command is incorrect, it needs to specify the interface, such as s0/0/0 rather than an IP address.
E. The same command needs to be entered on RouterA so that hosts on the 172.16.1.0 network can reach network 10.0.0.0.
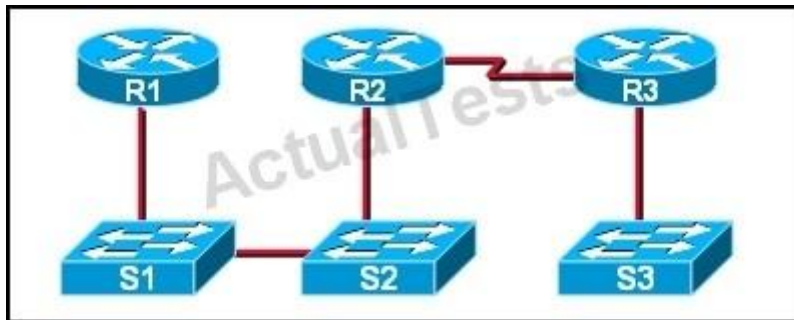
Correct Answer: AC
Section: (none)
Explanation

Explanation/Reference:
This is obviously the default value for the route which is set between the routers and since it is entered in such a manner that it ensures connectivity between the stub network and any host lying beyond RouterA.

QUESTION 64
Refer to the exhibit.

If CDP is enabled on all devices and interfaces, which devices will appear in the output of a show cdp neighbors command issued from R2?

A. R2 and R3
B. R1 and R3
C. R3 and S2
D. R1, S1, S2, and R3
E. R1, S1, S2, R3, and S3
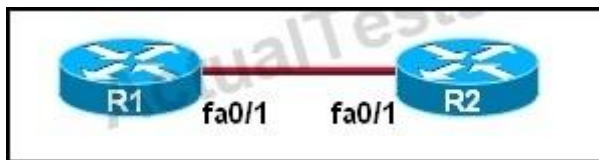
Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
A Cisco device enabled with CDP sends out periodic interface updates to a multicast address in order to make itself known to neighbors. Since it is a layer two protocol, these packets are not routed. So the devices detected would be immediate connected neighbors.

QUESTION 65
Refer to the exhibit.

The two routers have had their startup configurations cleared and have been restarted. At a minimum, what must the administrator do to enable CDP to exchange information between R1 and R2?

A. Configure the router with the cdp enable command.
B. Enter no shutdown commands on the R1 and R2 fa0/1 interfaces.
C. Configure IP addressing and no shutdown commands on both the R1 and R2 fa0/1 interfaces.
D. Configure IP addressing and no shutdown commands on either of the R1 or R2 fa0/1 interfaces.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
If the shut down commands are not entered, then CDP can exchange information between the two routers, else it would fail.

QUESTION 66
Which two commands will display the current IP address and basic Layer 1 and 2 status of an interface? (Choose two.)

A. router#show version
B. router#show ip interface
C. router#show protocols
D. router#show controllers
E. router#show running-config

Correct Answer: CD
Section: (none)
Explanation

Explanation/Reference:
Router#show protocols displays status of configured Layer 2 and 3 protocols while show controllers Displays statistics for interface hardware including the current IP address

QUESTION 67
An administrator is in the process of changing the configuration of a router. What command will allow the administrator to check the changes that have been made prior to saving the new configuration?

A. Router# show startup-config
B. Router# show current-config

C. Router# show running-config

D. Router# show memory

E. Router# show flash

F. Router# show processes

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
This command followed by the appropriate parameter will show the running config hence the admin will be able to see what changes have been made, and then they can be saved.

QUESTION 68
On a live network, which commands will verify the operational status of router interfaces? (Choose two.)

A. Router# show interfaces

B. Router# show ip protocols

C. Router# debug interface

D. Router# show ip interface brief

E. Router# show start

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:
Both these commands will show the current status of the interfaces, either in show or debug mode both will display the information.

QUESTION 69
Which router command will configure an interface with the IP address 10.10.80.1/19?

A. router(config-if)# ip address 10.10.80.1/19

B. router(config-if)# ip address 10.10.80.1 255.255.0.0

C. router(config-if)# ip address 10.10.80.1 255.255.255.0

D. router(config-if)# ip address 10.10.80.1 255.255.224.0

E. router(config-if)# ip address 10.10.80.1 255.255.240.0

F. router(config-if)# ip address 10.10.80.1 255.255.255.240
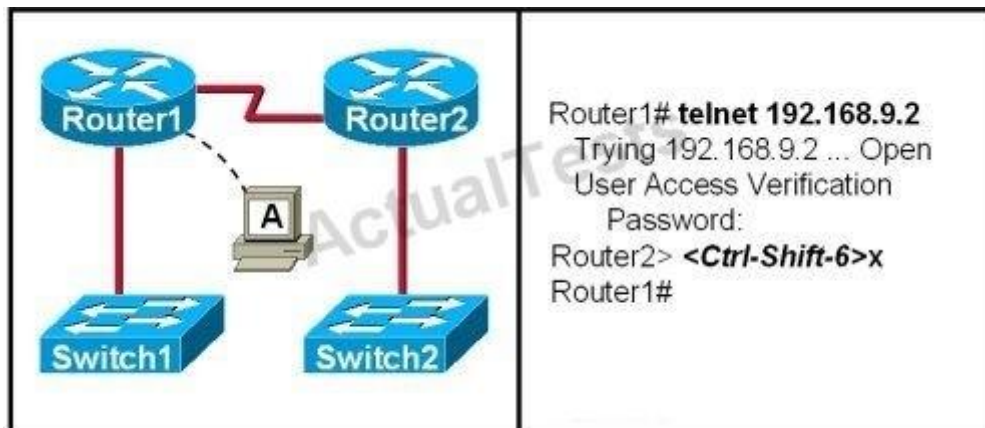
Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
255.255.224 equal /19 in CIDR format hence the answer

QUESTION 70
Refer to the exhibit.

If the resume command is entered after the sequence that is shown in the exhibit, which router prompt will be displayed?

A. Router1>
B. Router1#
C. Router2>
D. Router2#

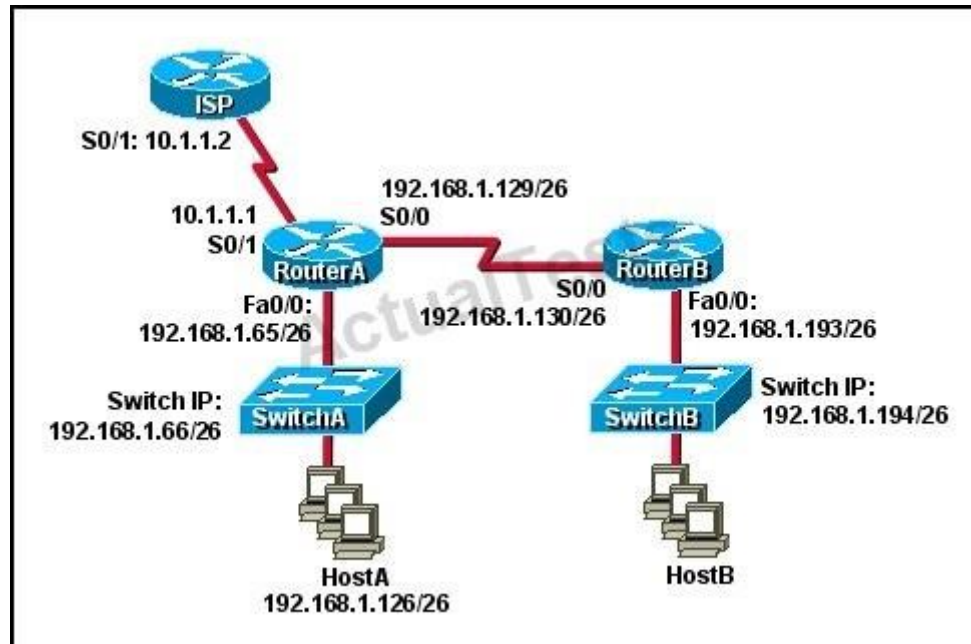**Correct Answer:** C
Section: (none)
Explanation

Explanation/Reference:
After resuming the telnet session by using the Enter key after it has been suspended, it will resume back to the telnet session so it will be back to the router2> prompt.

QUESTION 71
Refer to the exhibit.

Which default gateway address should be assigned to HostA?

A. 192.168.1.1
B. 192.168.1.65
C. 192.168.1.66
D. 192.168.1.129
E. 10.1.1.1
F. 10.1.1.2

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:

It should be one less than the switch IP to which it is connected so it will be B.

Topic 5, IP Services

QUESTION 72
What is the best practice when assigning IP addresses in a small office of six hosts?

A. Use a DHCP server that is located at the headquarters.
B. Use a DHCP server that is located at the branch office.
C. Assign the addresses by using the local CDP protocol.
D. Assign the addresses statically on each node.

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
Its best to use static addressing scheme where the number of systems is manageable rather than use dynamic protocol as it is easy to operate and manage.

QUESTION 73

Select and Place:

Various protocols are listed on the left. On the right are applications for the use of those protocols. Drag the protocol on the left to an associated function for protocol on the right. (Not all options are used.)

Protocols	
ICMP	A PC sends packets to the default gateway IP address the fi[r] since the PC turned on.
DHCP	The network administrator is checking basic IP connectivity workstation to a server.
RARP	The TCP/IP protocol stack must find an IP address for pa[c] destined for a URL.
UDP	A network device will automatically assign IP addresses workstations.
DNS	
ARP	

Correct Answer:

Various protocols are listed on the left. On the right are applications for the use of those protocols. Drag the protocol on the left to an associated function for protocol on the right. (Not all options are used.)

		ARP	
		ICMP	
RARP		DNS	
UDP		DHCP	

Section: (none)
Explanation

Explanation/Reference:

QUESTION 74

Select and Place:

Move the protocol or service on the left to a situation on the right where it would be used. (Not all options are used.)

OSPF	A PC with address 10.1.5.10 must access devices on the in
ARP	Only routers and servers require static IP addresses. Eas administration is required.
NAT	A PC only knows a server as **//MediaServer**. IP needs to se to that server.
DNS	A protocol is needed to replace current static routes with aut route updates.
SQL	
DHCP	

Correct Answer:

Move the protocol or service on the left to a situation on the right where it would be used. (Not all options are used.)

		NAT
ARP		DHCP
		DNS
		OSPF
SQL		

Section: (none)
Explanation

Explanation/Reference:

QUESTION 75

Select and Place:

Drag the definition on the left to the correct term on the right. Not all definitions on the left will be used.

Definitions		Terms
a protocol that converts human-readable names into machine-readable addresses		SNMP
used to assign IP addresses automatically and set parameters such as subnet mask and default gateway		FTP
a protocol for using HTTP or HTTPS to exchange XML-based messages over computer networks		TFTP
a connectionless service that uses UDP to transfer files between systems		DNS
a protocol used to monitor and manage network devices		DHCP
a reliable, connection-oriented service that uses TCP to transfer files between systems		

Correct Answer:

Drag the definition on the left to the correct term on the right. Not all definitions on the left will be used.

	a protocol used to monitor and manage network device
	a reliable, connection-oriented service that uses TCP to trans between systems
a protocol for using HTTP or HTTPS to exchange XML-based messages over computer networks	a connectionless service that uses UDP to transfer files be systems
	a protocol that converts human-readable names into machine-readable addresses
	used to assign IP addresses automatically and set paramete as subnet mask and default gateway

Section: (none)
Explanation

Explanation/Reference:

QUESTION 76
In the configuration of NAT, what does the keyword overload signify?

A. When bandwidth is insufficient, some hosts will not be allowed to access network translation.

B. The pool of IP addresses has been exhausted.

C. Multiple internal hosts will use one IP address to access external network resources.

D. If the number of available IP addresses is exceeded, excess traffic will use the specified address pool.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
Overload simply means using multiple hosts to access the network using the same translated IP address.

QUESTION 77
What happens when computers on a private network attempt to connect to the Internet through a Cisco router running PAT?

A. The router uses the same IP address but a different TCP source port number for each connection.

B. An IP address is assigned based on the priority of the computer requesting the connection.

C. The router selects an address from a pool of one-to-one address mappings held in the lookup table.

D. The router assigns a unique IP address from a pool of legally registered addresses for the duration of the connection.

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Port Address Translation makes the PC connect to the Internet but using different TCP source port

QUESTION 78
When configuring NAT, the Internet interface is considered to be what?

A. local

B. inside

C. global

D. outside

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

Network address translation or NAT requires the Internet to be considered as an outside interface else it won't serve the purpose it intends to.

QUESTION 79
The ip helper-address command does what?

A. assigns an IP address to a host
B. resolves an IP address from a DNS server
C. relays a DHCP request across networks
D. resolves an IP address overlapping issue

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
When the DHCP client sends the DHCP request packet, it doesn't have an IP address. So it uses the all-zeroes address, 0.0.0.0, as the IP source address. And it doesn't know how to reach the DHCP server, so it uses a general broadcast address, 255.255.255.255, for the destination.
So the router must replace the source address with its own IP address, for the interface that received the request. And it replaces the destination address with the address specified in the ip helper-address command. The client device's MAC address is included in the payload of the original DHCP request packet, so the router doesn't need to do anything to ensure that the server receives this information.

Topic 6, Network Device Security

QUESTION 80
Refer to the exhibit.


```
Router# configure terminal
Router(config)# hostname Router1
Router1(config)# enable secret sanfran
Router1(config)# enable password cisco
Router1(config)# line vty 0 4
Router1(config-line)# password sanjose
Router1(config-line)#
```

The network administrator made the entries that are shown and then saved the configuration. From a console connection, what password or password sequence is required for the administrator to access privileged mode on Router1?

A. cisco

B. sanfran

C. sanjose

D. either cisco or sanfran

E. either cisco or sanjose

F. sanjose and sanfran

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
The enable secret password takes precedence over the enable password, so sanfran will be used.

QUESTION 81

Select and Place:

Drag the appropriate command on the left to the configuration task it accomplishes. (Not all options are used.)

login password cantCome1n	encrypt all clear text passwords
enable password uwi11NeverNo	protect access to the user mode prompt
service password-encryption	set privileged mode encrypted password
line console 0 password friendS0nly	set password to allow Telnet connections
enable secret noWay1n4u	set privileged mode clear text password
line vty 0 4 password 2hard2Guess	

Correct Answer:

Drag the appropriate command on the left to the configuration task it accomplishes. (Not all options are used.)

login password cantCome1n

service password-encryption

line console 0
password friendS0nly

enable secret noWay1n4u

line vty 0 4
password 2hard2Guess

enable password uwi11NeverNo

Section: (none)
Explanation

Explanation/Reference:

QUESTION 82
The following commands are entered on the router:

Burbank(config)# enable secret fortress

Burbank(config)# line con 0

Burbank(config-line)# login

Burbank(config-line)# password n0way1n

Burbank(config-line)# exit

Burbank(config)# service password-encryption

What is the purpose of the last command entered?

A. to require the user to enter an encrypted password during the login process
B. to prevent the vty, console, and enable passwords from being displayed in plain text in the configuration files
C. to encrypt the enable secret password
D. to provide login encryption services between hosts attached to the router

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Certain types of passwords, such as Line passwords, by default appear in clear text in the configuration file. You can use the service password-encryption command to make them more secure. Once this command is entered, each password configured is automatically encrypted and thus rendered illegible inside the configuration file (much as the Enable/Enable Secret passwords are). Securing Line passwords is doubly important in networks on which TFTP servers are used, because TFTP backup entails routinely moving config files across networks--and config files, of course, contain Line passwords.

QUESTION 83
What is the effect of using the service password-encryption command?

A. Only the enable password will be encrypted.
B. Only the enable secret password will be encrypted.
C. Only passwords configured after the command has been entered will be encrypted.
D. It will encrypt the secret password and remove the enable secret password from the configuration.
E. It will encrypt all current and future passwords.

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:
Encryption further adds a level of security to the system as anyone having access to the database of passwords cannot reverse the process of encryption to know the actual passwords which isn't the case if the passwords are stored simply.

QUESTION 84
An administrator has connected devices to a switch and, for security reasons, wants the dynamically learned MAC addresses from the address table added to the running configuration.
What must be done to accomplish this?

A. Enable port security and use the keyword sticky.

B. Set the switchport mode to trunk and save the running configuration.

C. Use the switchport protected command to have the MAC addresses added to the configuration.

D. Use the no switchport port-security command to allow MAC addresses to be added to the configuration.

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
One can configure MAC addresses to be sticky. These can be dynamically learned or manually configured, stored in the address table, and added to the running configuration. If these addresses are saved in the configuration file, the interface does not need to dynamically relearn them when the switch restarts, hence enabling security as desired.

QUESTION 85
A company has placed a networked PC in a lobby so guests can have access to the corporate directory. A security concern is that someone will disconnect the directory PC and re-connect their laptop computer and have access to the corporate network. For the port servicing the lobby, which three configuration steps should be performed on the switch to prevent this? (Choose three.)

A. Enable port security.

B. Create the port as a trunk port.

C. Create the port as an access port.

D. Create the port as a protected port.

E. Set the port security aging time to 0.

F. Statically assign the MAC address to the address table.

G. Configure the switch to discover new MAC addresses after a set time of inactivity.

Correct Answer: ACF
Section: (none)

Explanation

Explanation/Reference:
If port security is enabled and the port is only designated as access port, and finally static MAC address is assigned, it ensures that even if a physical connection is done by taking out the directory PC and inserting personal laptop or device, the connection cannot be made to the corporate network, hence ensuring safety.

QUESTION 86
Why would a network administrator configure port security on a switch?

A. to prevent unauthorized Telnet access to a switch port
B. to prevent unauthorized hosts from accessing the LAN
C. to limit the number of Layer 2 broadcasts on a particular switch port
D. block unauthorized access to the switch management interfaces

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
You can use the port security feature to restrict input to an interface by limiting and identifying MAC addresses of the stations allowed to access the port. When you assign secure MAC addresses to a secure port, the port does not forward packets with source addresses outside the group of defined addresses. If you limit the number of secure MAC addresses to one and assign a single secure MAC address, the workstation attached to that port is assured the full bandwidth of the port.
If a port is configured as a secure port and the maximum number of secure MAC addresses is reached, when the MAC address of a station attempting to access the port is different from any of the identified secure MAC addresses, a security violation occurs. Also, if a station with a secure MAC address configured or learned on one secure port attempts to access another secure port, a violation is flagged.

QUESTION 87
How can you ensure that only the MAC address of a server is allowed by switch port Fa0/1?

A. Configure port Fa0/1 to accept connections only from the static IP address of the server.
B. Configure the server MAC address as a static entry of port security.
C. Use a proprietary connector type on Fa0/1 that is incomputable with other host connectors.
D. Bind the IP address of the server to its MAC address on the switch to prevent other hosts from spoofing the server IP address.
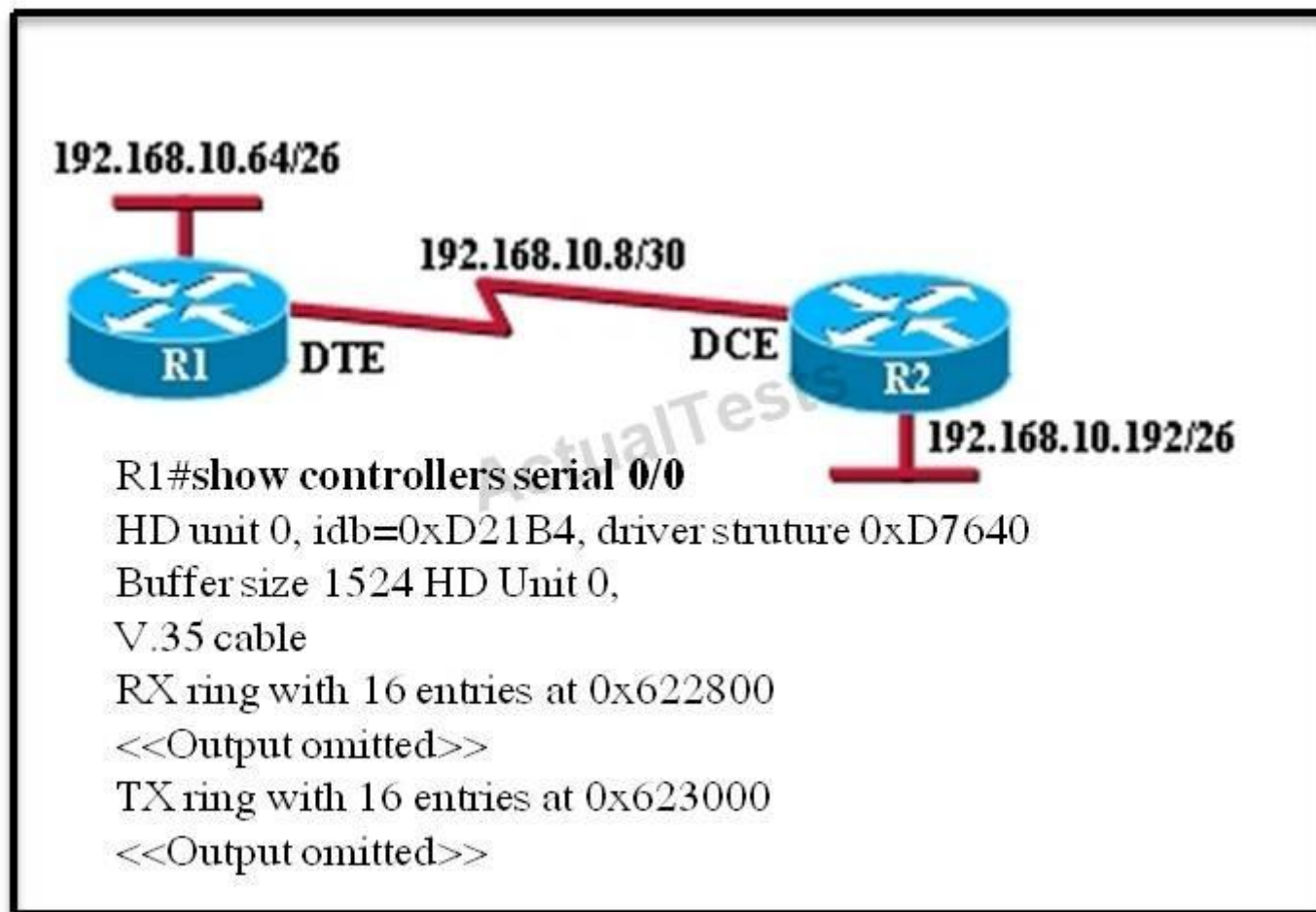
Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
When the MAC address is configured as static entry, no other address is allowed.

QUESTION 88
Refer to the exhibit.

192.168.10.64/26

192.168.10.8/30

R1 DTE

DCE R2

192.168.10.192/26

R1#show controllers serial 0/0
HD unit 0, idb=0xD21B4, driver struture 0xD7640
Buffer size 1524 HD Unit 0,
V.35 cable
RX ring with 16 entries at 0x622800
<<Output omitted>>
TX ring with 16 entries at 0x623000
<<Output omitted>>

An administrator cannot connect from R1 to R2. To troubleshoot this problem, the administrator has entered the command shown in the exhibit. Based on the output shown, what could be the problem?

A. The serial interface is configured for half duplex.
B. The serial interface does not have a cable attached.
C. The serial interface has the wrong type of cable attached.
D. The serial interface is configured for the wrong frame size.
E. The serial interface has a full buffer.
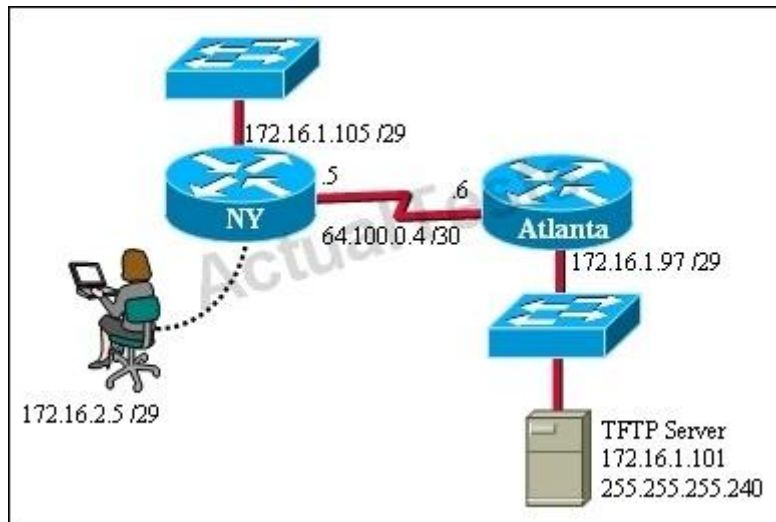
Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
since the output is not forthcoming it shows that the type of cable attached is wrong, though the cable is connected since it shows the cable type. According to the figure DTE cable should connect to R1 on interface but while examining using show controllers serial 0/0 command it showing that a DCE is connected so the wrong type of cable is being used.

QUESTION 89
Refer to the exhibit.

A TFTP server has recently been installed in the Atlanta office. The network administrator is located in the NY office and has made a console connection to the NY router. After establishing the connection they are unable to backup the configuration file and IOS of the NY router to the TFTP server. What is the cause of this problem?

A. The NY router has an incorrect subnet mask.
B. The TFTP server has an incorrect IP address.
C. The TFTP server has an incorrect subnet mask.
D. The network administrator computer has an incorrect IP address.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
The subnet mast of the TFTP server needs to be in tune with the other network requirements else it wont be possible.

QUESTION 90
If a host experiences intermittent issues that relate to congestion within a network while remaining connected, what could cause congestion on this LAN?

A. half-duplex operation
B. broadcast storms
C. network segmentation
D. multicasting

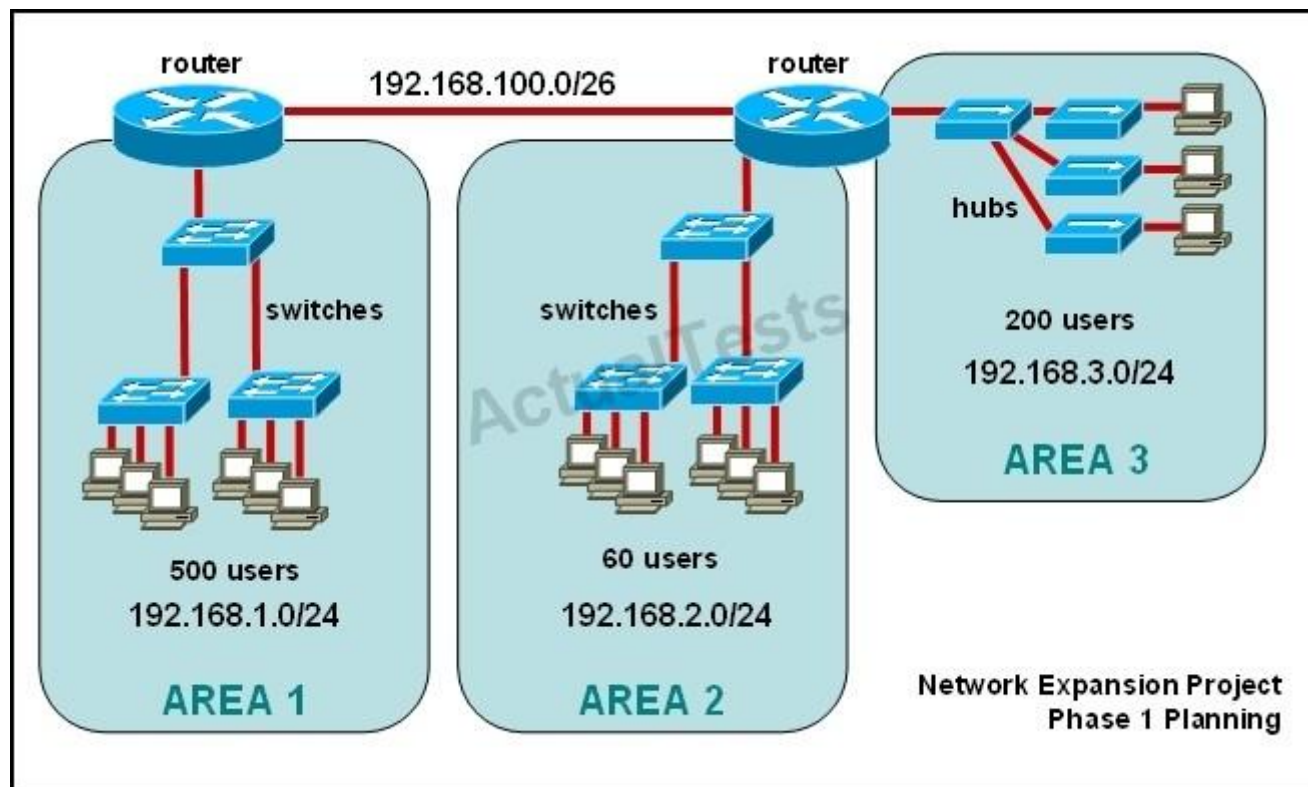**Correct Answer:** B
Section: (none)
Explanation

Explanation/Reference:
A broadcast storm can consume sufficient network resources so as to render the network unable to transport normal traffic.

QUESTION 91
Refer to the exhibit.

The junior network support staff provided the diagram as a recommended configuration for the first phase of a four-phase network expansion project. The entire network expansion will have over 1000 users on 14 network segments and has been allocated this IP address space.

192.168.1.1 through 192.168.5.255

192.168.100.1 through 192.168.100.255
What are three problems with this design? (Choose three.)

A. The AREA 1 IP address space is inadequate for the number of users.
B. The AREA 3 IP address space is inadequate for the number of users.
C. AREA 2 could use a mask of /25 to conserve IP address space.
D. The network address space that is provided requires a single network-wide mask.
E. The router-to-router connection is wasting address space.

F. The broadcast domain in AREA 1 is too large for IP to function.

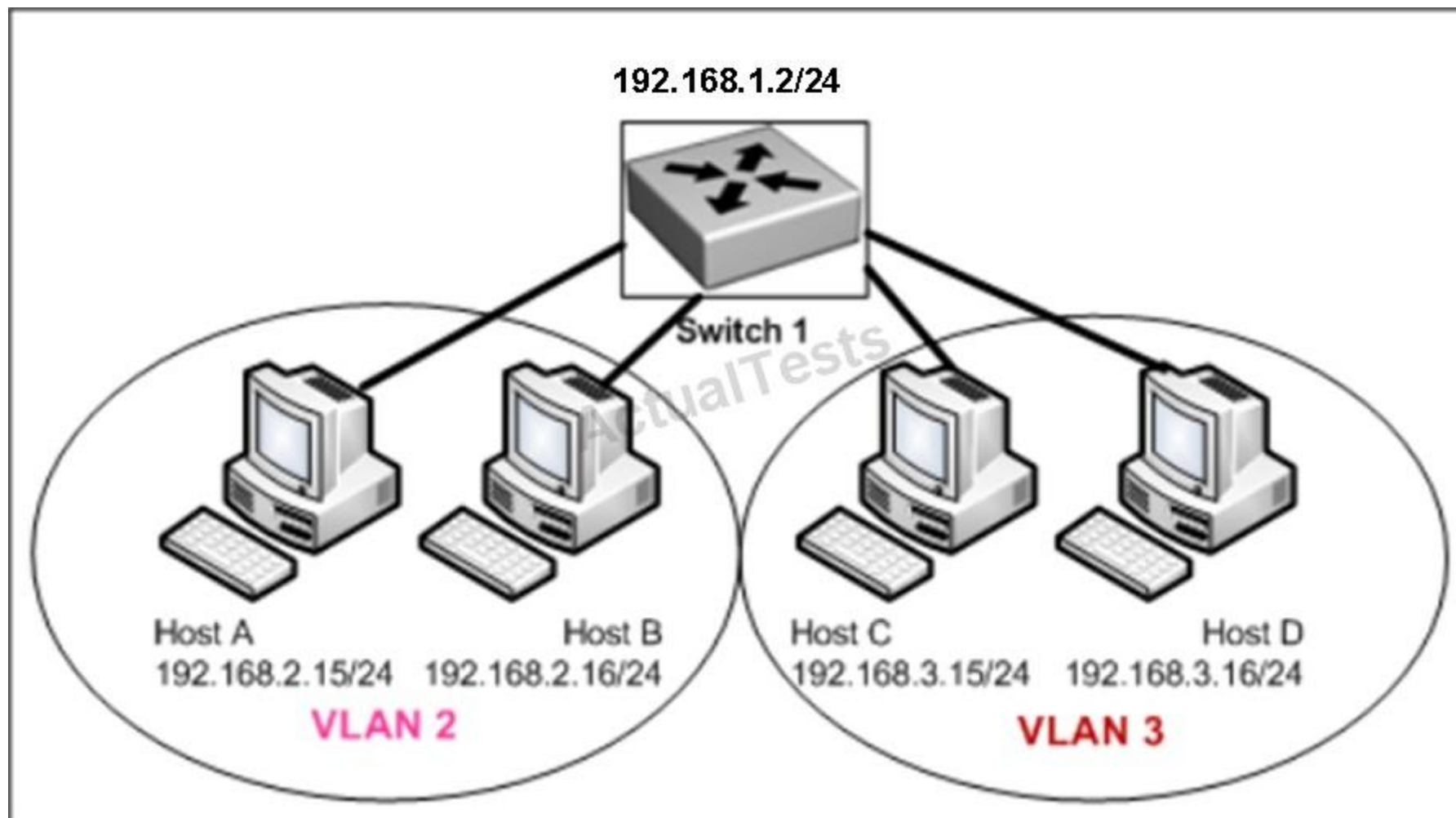**Correct Answer:** ACE
Section: (none)
Explanation

Explanation/Reference:
The given IP addresses of areas 1 and 3 along with network masks of 24 cannot accommodate 500 users so are inadequate, while the area 2 is having over capacity so its network mask can be reduced to 25 to accommodate the only 60 users it has.

QUESTION 92
Refer to the exhibit.

192.168.1.2/24

Switch 1

Host A
192.168.2.15/24

Host B
192.168.2.16/24

VLAN 2

Host C
192.168.3.15/24

Host D
192.168.3.16/24

VLAN 3

Host A can communicate with Host B but not with Hosts C or D. How can the network administrator solve this problem?

A. Configure Hosts C and D with IP addresses in the 192.168.2.0 network.
B. Install a router and configure a route to route between VLANs 2 and 3.
C. Install a second switch and put Hosts C and D on that switch while Hosts A and B remain on the original switch.
D. Enable the VLAN trunking protocol on the switch.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Two VLANs require a router in between otherwise they cannot communicate through a simple switch mechanism

QUESTION 93
Refer to the exhibit.

```
interface vlan 1
ip address 192.168.17.253  255.255.255.240
no shutdown
exit
ip default-gateway 192.168.17.1
line vty 0 15
password cisco
login
exit
```

A network administrator has configured a Catalyst 2950 switch for remote management by pasting into the console the configuration commands that are shown in the exhibit. However, a Telnet session cannot be successfully established from a remote host. What should be done to fix this problem?

A. Change the first line to interface fastethernet 0/1.
B. Change the first line to interface vlan 0/1.
C. Change the fifth line to ip default-gateway 192.168.17.241.
D. Change the fifth line to ip route 0.0.0.0 0.0.0.0 192.168.17.1.
E. Change the sixth line to line con 0.
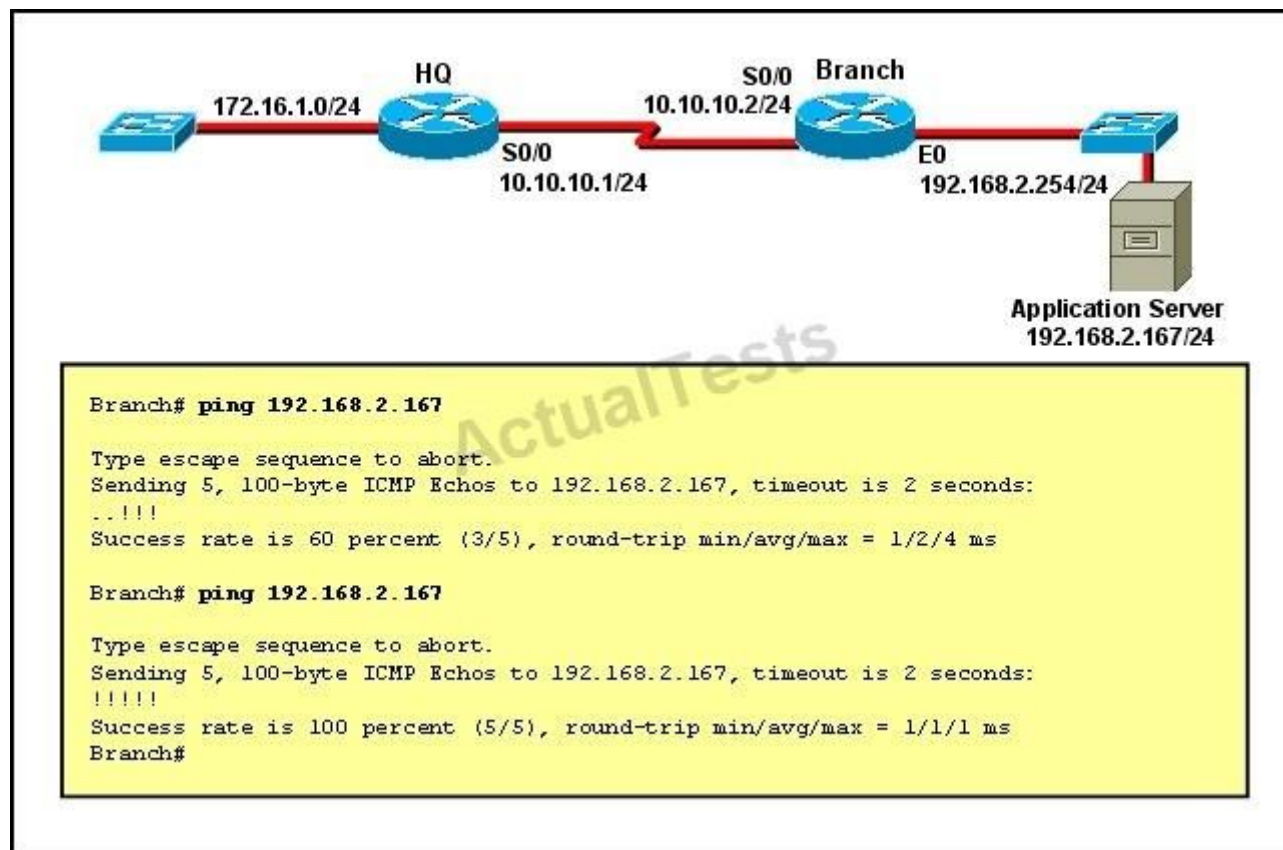
Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

The default gateway for remote session is 192.168.17.241 and not the one given in the exhibit.

QUESTION 94
Refer to the exhibit.

The network administrator is testing connectivity from the branch router to the newly installed application server. What is the most likely reason for the first ping having a success rate of only 60 percent?

A. The network is likely to be congested, with the result that packets are being intermittently dropped.
B. The branch router had to resolve the application server MAC address.
C. There is a short delay while NAT translates the server IP address.

D. A routing table lookup delayed forwarding on the first two ping packets.

E. The branch router LAN interface should be upgraded to FastEthernet.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Initially the MAC address had to be resolved, but later on it was confirmed to ping went straight away

QUESTION 95

Instructions

For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.
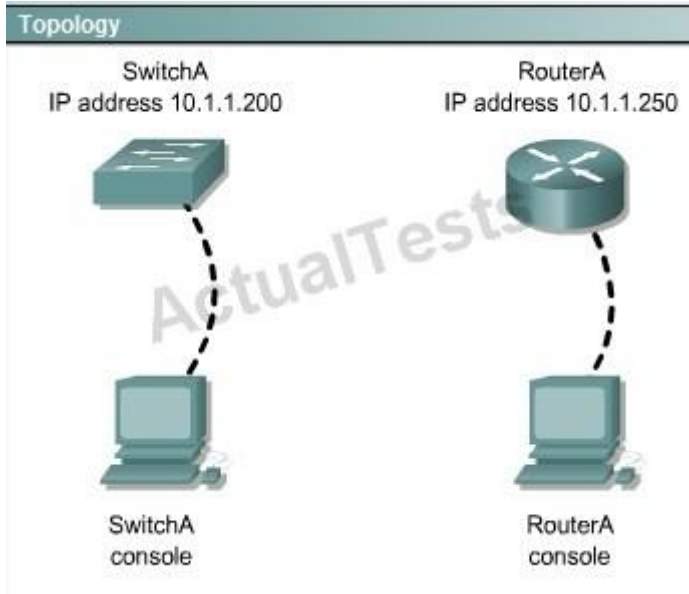
RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

NOTE: The configuration command has been disabled for both the router and switch in this simulation.

Topology

SwitchA
IP address 10.1.1.200

RouterA
IP address 10.1.1.250

SwitchA
console

RouterA
console

Select two options which are security Issues which need to be modified before RouterA is used? (Choose two.)

A. unencrypted weak password is configured to protect privilege mode
B. inappropriate wording in banner message
C. the virtual terminal lines have a weak password configured
D. virtual terminal lines have a password, but it will not be used
E. configuration supports un-secure web server access

Correct Answer: BD
Section: (none)
Explanation

Explanation/Reference:
(this answer can be done by simulation only, don't know user name password and banner message etc)

QUESTION 96

Topology

SwitchA
IP address 10.1.1.200

RouterA
IP address 10.1.1.250

SwitchA
console

RouterA
console

Select three options which are security issues with the current configuration of SwitchA. (Choose three.)

A. privilege mode is protected with an unencrypted password
B. inappropriate wording in banner message
C. virtual terminal lines are protected only by a password requirement
D. both the username and password are weak
E. telnet connections can be used to remotely manage the switch
F. cisco user will be granted privilege level 15 by default

Correct Answer: ABD
Section: (none)
Explanation

Explanation/Reference:
(this answer can be done by simulation only, don't know user name password and banner message etc)

QUESTION 97

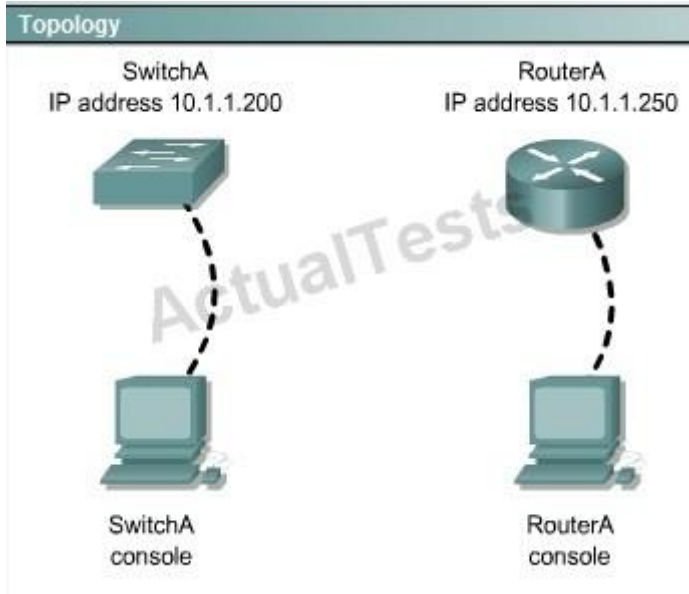For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.

RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

NOTE: The configuration command has been disabled for both the router and switch in this simulation.

Topology

SwitchA
IP address 10.1.1.200

RouterA
IP address 10.1.1.250

SwitchA
console

RouterA
console

Which two of the following are true regarding the configuration of RouterA? (Choose two.)

A. at least 5 simultaneous remote connections are possible
B. only telnet protocol connections to RouterA are supported
C. remote connections to RouterA using telnet will succeed
D. console line connections will nevertime out due to inactivity
E. since DHCP is not used on FaO/1 there is not a need to use the NAT protocol

Correct Answer: AC
Section: (none)
Explanation

Explanation/Reference:
The IP address can accommodate 5 hosts at least, telnet can be accessed on the router

QUESTION 98

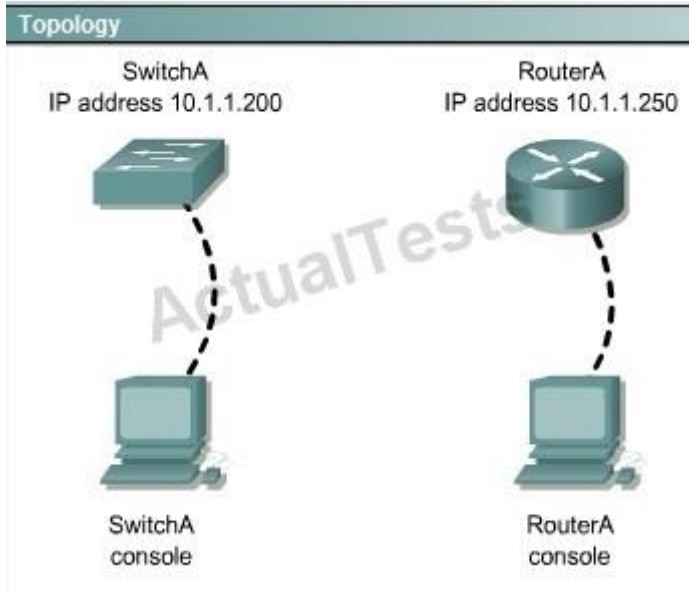For both the Router and the Switch the simulated console mode needs to start and remain in enabled mode.

RouterA and SwitchA have been configured to operate in a private network which will connect to the Internet. You have been asked to review the configuration prior to cabling and implementation.

This task requires the use of various IOS commands to access and inspect the running configuration of RouterA and SwitchA. No configuration changes are necessary.

You will connect to RouterA and SwitchA via the console devices that are attached to each.

There are 4 multiple-choice questions with this task. Be sure to answer all of them before leaving this item. In order to score the maximum points you will need to have accessed both SwitchA and RouterA.

NOTE: The configuration command has been disabled for both the router and switch in this simulation.

Topology

SwitchA
IP address 10.1.1.200

RouterA
IP address 10.1.1.250

SwitchA
console

RouterA
console

Which of the following is true regarding the configuration of SwitchA?

A. only 5 simultaneous remote connections are possible
B. remote connections using ssh will require a username and password
C. only connections from the local network will be possible
D. console access to SwitchA requires a password

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Ssh login requires a user name and password always while other conditions may or may not be true.

QUESTION 99

Instructions

You can click on the grey buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation.
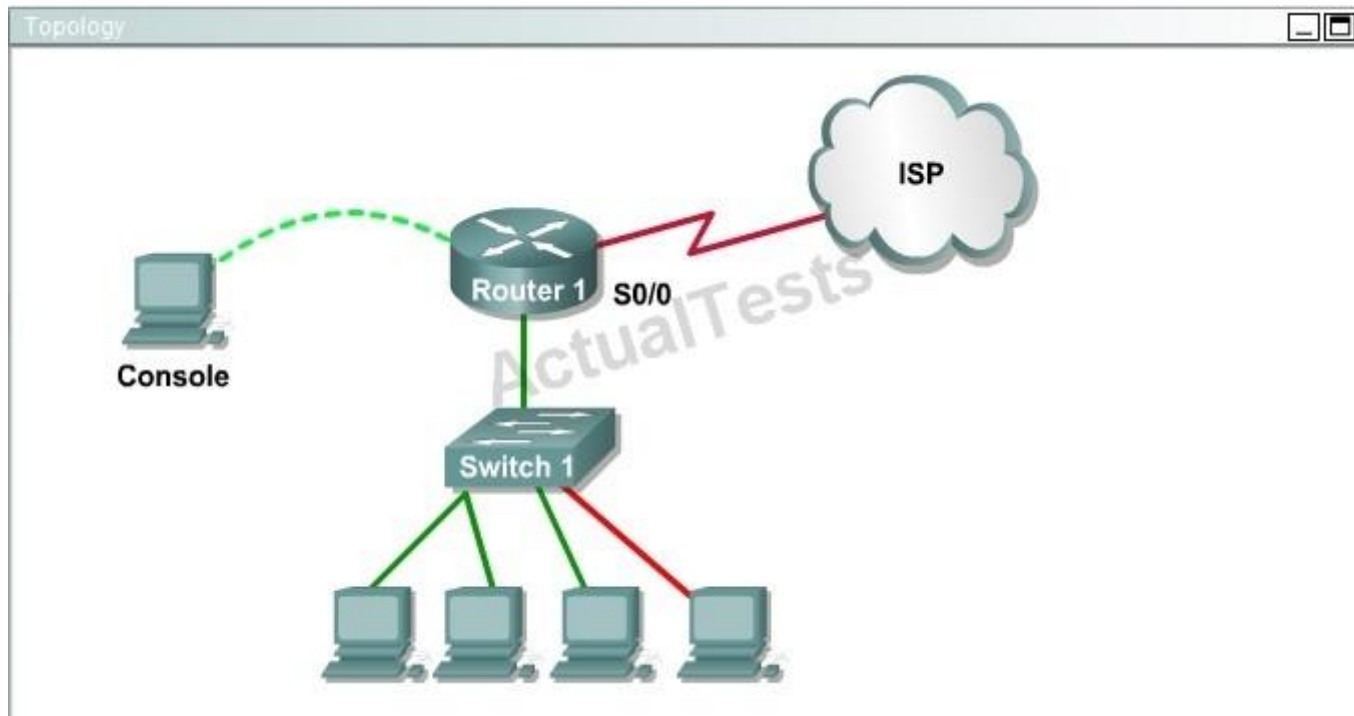
Scenario

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

NOTE: The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.

```
R1                                                                    ▬

                                 ActualTests



Press RETURN to get started!
Router1>
```

What is the subnet broadcast address of the LAN connected to Router1?

A. 192.168.8.15
B. 192.168.8.31
C. 192.168.8.63
D. 192.168.8.127

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
The IP address assigned to FA0/1 is 192.168.8.9/29, making 192.168.8.15 the broadcast address.

QUESTION 100

Scenario

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

NOTE: The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.

R1

Press RETURN to get started!
Router1>

What is the bandwidth on the WAN interface of Router 1?

A. 16 Kbit/sec
B. 32 Kbit/sec
C. 64 Kbit/sec
D. 128 Kbit/sec
E. 512 Kbit/sec
F. 1544 Kbit/sec

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Use the "show interface s0/0" to see the bandwidth set at 16Kbit/sec.

QUESTION 101

Instructions

You can click on the grey buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation.
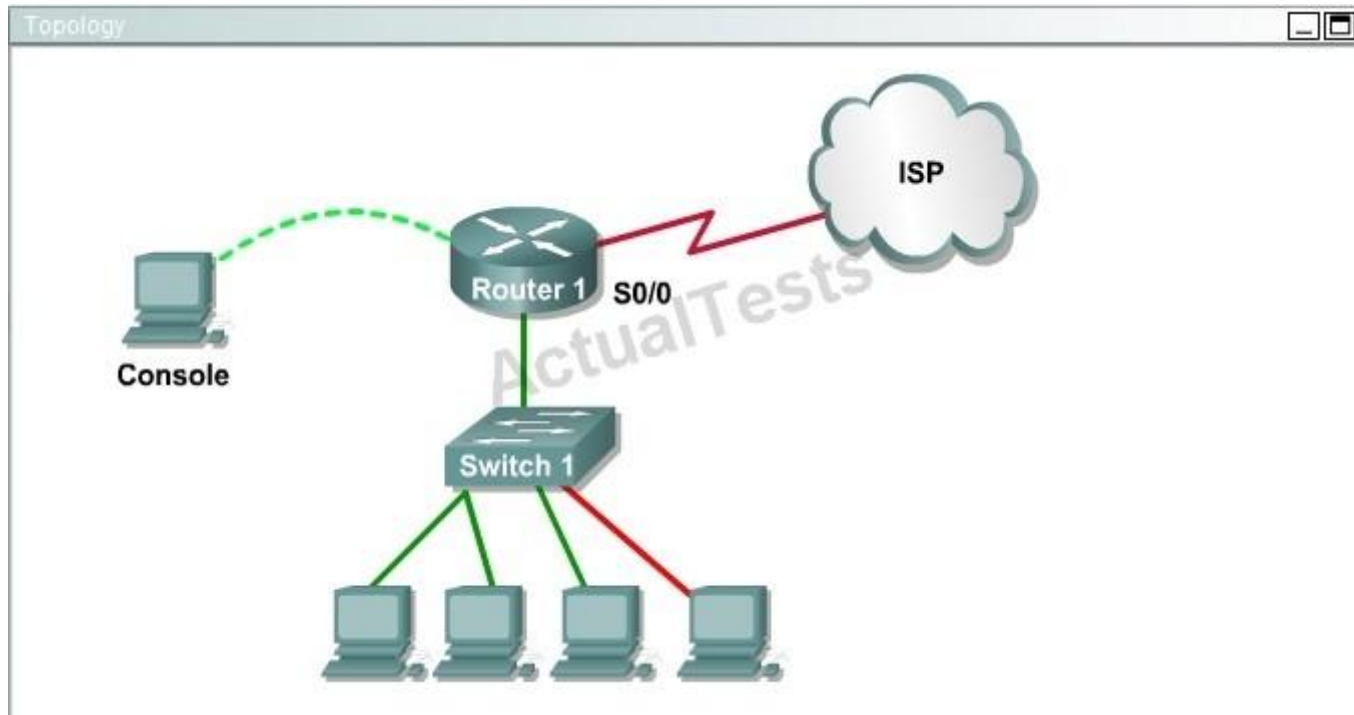
Scenario

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

NOTE: The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.

```
R1                                                              [_]

                                                                 ▲








                    ActualTests










Press RETURN to get started!
Router1>                                                         ▼
```

Including the address on the Routed Ethernet interface, how many hosts can have IP addresses on the LAN to which Routed is connected?

A. 6
B. 30
C. 62
D. 126

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
This is a /29 address, so there are 6 usable IP's on this subnet.

QUESTION 102

Instructions

You can click on the grey buttons below to view the different windows.

Each of the windows can be minimized by clicking on the [-]. You can also reposition a window by dragging it by the title bar.

The "Tab" key and most commands that use the "Control" or "Escape" keys are not supported and are not necessary to complete this simulation.
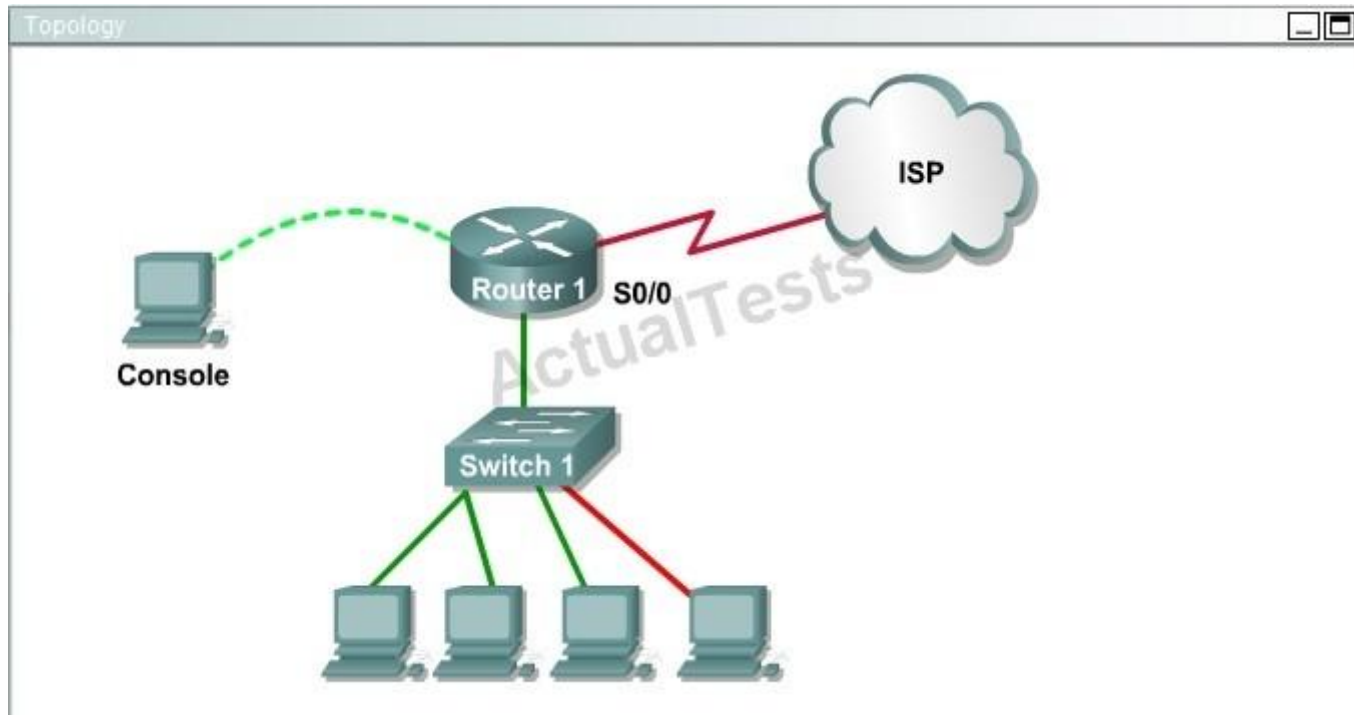
Scenario

This task requires the use of various **show** commands from the CLI of Router1 to answer four multiple-choice questions. This task does **not** require any configuration.

NOTE: The show running-configuration and the show startup-configuration commands have been disabled in this simulation.

To access the multiple-choice questions, click on the numbered boxes on the right of the top panel.

There are 4 multiple-choice questions with this task. Be sure to answer all 4 questions before leaving this item.

```
R1                                                              ▄

                                                                ▲




                        ActualTests




Press RETURN to get started!                                    ▐
Router1>                                                        ▼
```

The hosts in the LAN are not able to connect to the Internet. Which commands will correct this issue?

○ Router1(conf)# interface fa0/0
Router1(conf-if)# no shutdown

○ Router1(conf)# interface fa0/1
Router1(conf-if)# no shutdown

○ Router1(conf)# interface s0/0
Router1(conf-if)# no shutdown

○ Router1(conf)# interface s0/1
Router1(conf-if)# no shutdown

○ Router1(conf)# interface s0/0
Router1(conf-if)# ip address 10.11.12.13 255.255.255.252

○ Router1(conf)# interface s0/1
Router1(conf-if)# ip address 10.100.1.1255.255.255.252

A. Option A
B. Option B
C. Option C
D. Option D
E. Option E

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
Do a "show ip int brief" and you will see that Fa0/1 has an IP address assigned, but it is shut down.

Topic 8, OSPF Questions

QUESTION 103
Which parameter or parameters are used to calculate OSPF cost in Cisco routers?

A. Bandwidth
B. Bandwidth and Delay
C. Bandwidth, Delay, and MTU
D. Bandwidth, MTU, Reliability, Delay, and Load

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
The well-known formula to calculate OSPF cost is Cost = 108 / Bandwidth

QUESTION 104
Why do large OSPF networks use a hierarchical design? (Choose three.)

A. to decrease latency by increasing bandwidth
B. to reduce routing overhead
C. to speed up convergence
D. to confine network instability to single areas of the network
E. to reduce the complexity of router configuration
F. to lower costs by replacing routers with distribution layer switches

Correct Answer: BCD
Section: (none)
Explanation

Explanation/Reference:
OSPF implements a two-tier hierarchical routing model that uses a core or backbone tier known as area zero (0). Attached to that backbone via area border routers (ABRs) are a number of secondary tier areas. The hierarchical approach is used to achieve the following:

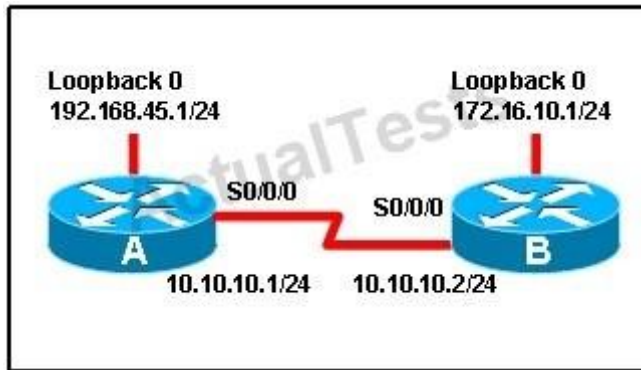Rapid convergence because of link and/or switch failures ·

Deterministic traffic recovery
·

Scalable and manageable routing hierarchy, reduced routing overhead.

QUESTION 105
Refer to the exhibit.

When running OSPF, what would cause router A not to form an adjacency with router B?

A. The loopback addresses are on different subnets.
B. The values of the dead timers on the routers are different.
C. Route summarization is enabled on both routers.
D. The process identifier on router A is different than the process identifier on router B.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
To form an adjacency (become neighbor), router A & B must have the same Hello interval, Dead interval and AREA numbers

QUESTION 106
A router has learned three possible routes that could be used to reach a destination network. One route is from EIGRP and has a composite metric of 20514560. Another route is from OSPF with a metric of 782. The last is from RIPv2 and has a metric of 4. Which route or routes will the router install in the routing table?

A. the OSPF route
B. the EIGRP route
C. the RIPv2 route
D. all three routes
E. the OSPF and RIPv2 routes

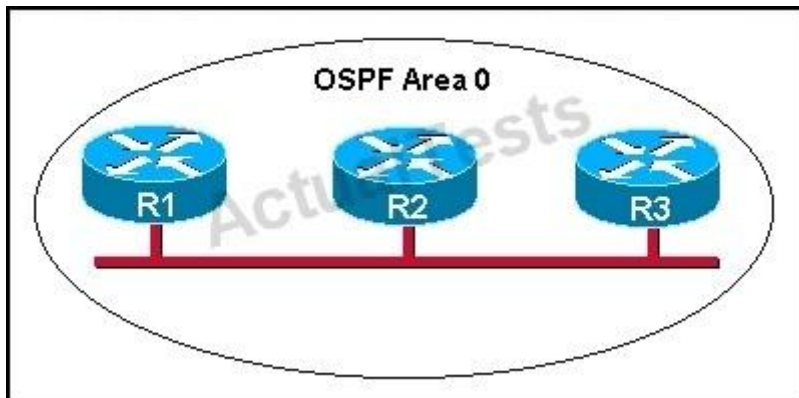**Correct Answer:** B
Section: (none)

Explanation

Explanation/Reference:
When one route is advertised by more than one routing protocol, the router will choose to use the routing protocol which has lowest Administrative Distance. The Administrative Distances of popular routing protocols are listed below:

Route Source	Administrative Distance
Directly Connected	0
Static	1
EIGRP	90
EIGRP Summary route	5
OSPF	110
RIP	120

QUESTION 107
Refer to the graphic.

R1 is unable to establish an OSPF neighbor relationship with R3. What are possible reasons for this problem? (Choose two.)

A. All of the routers need to be configured for backbone Area 1.
B. R1 and R2 are the DR and BDR, so OSPF will not establish neighbor adjacency with R3.
C. A static route has been configured from R1 to R3 and prevents the neighbor adjacency from being established.

D. The hello and dead interval timers are not set to the same values on R1 and R3.

E. EIGRP is also configured on these routers with a lower administrative distance.

F. R1 and R3 are configured in different areas.

Correct Answer: DF
Section: (none)
Explanation

Explanation/Reference:
This question is to examine the conditions for OSPF to create neighborhood. So as to make the two routers become neighbors, each router must be matched with the following items:
1. The area ID and its types;
2. Hello and failure time interval timer;
3. OSPF Password (Optional);

QUESTION 108
Which command is used to display the collection of OSPF link states?

A. show ip ospf link-state

B. show ip ospf lsa database

C. show ip ospf neighbors

D. show ip ospf database

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:
The "show ip ospf database" command displays the link states. Here is an example:
Here is the lsa database on R2.
R2#show ip ospf database
OSPF Router with ID (2.2.2.2) (Process ID 1)
Router Link States (Area 0)
Link ID ADV Router Age Seq# Checksum Link count2.2.2.2 2.2.2.2 793 0x80000003 0x004F85 210.4.4.4 10.4.4.4 776 0x80000004 0x005643 1111.111.111.111
111.111.111.111 755 0x80000005 0x0059CA 2133.133.133.133 133.133.133.133 775 0x80000005 0x00B5B1 2 Net Link States (Area 0)
Link ID ADV Router Age Seq# Checksum10.1.1.1 111.111.111.111 794 0x80000001 0x001E8B10.2.2.3 133.133.133.133 812 0x80000001 0x004BA910.4.4.1
111.111.111.111 755 0x80000001 0x007F1610.4.4.3 133.133.133.133 775 0x80000001 0x00C31F

QUESTION 109
Refer to the exhibit.

```
City#show ip interface brief

Interface          IP-Address      OK?  Method   Status   Protocol
FastEthernet0/0    192.168.12.48   YES  manual    up        up
FastEthernet0/1    192.168.12.65   YES  manual    up        up
Serial0/0          192.168.12.121  YES  manual    up        up
Serial0/1          unassigned      YES  unset     up        up
Serial0/1.102      192.168.12.125  YES  manual    up        up
Serial0/1.103      192.168.12.129  YES  manual    up        up
Serial0/1.104      192.168.12.133  YES  manual    up        up
City#
```

A network associate has configured OSPF with the command:

City(config-router)# network 192.168.12.64 0.0.0.63 area 0

After completing the configuration, the associate discovers that not all the interfaces are participating in OSPF. Which three of the interfaces shown in the exhibit will participate in OSPF according to this configuration statement? (Choose three.)

A. FastEthernet0 /0
B. FastEthernet0 /1
C. Serial0/0
D. Serial0/1.102
E. Serial0/1.103
F. Serial0/1.104

Correct Answer: BCD
Section: (none)
Explanation

Explanation/Reference:
The "network 192.168.12.64 0.0.0.63 equals to network 192.168.12.64/26. This network has:
+ Increment: 64 (/26= 1111 1111.1111 1111.1111 1111.1100 0000) + Network address: 192.168.12.64
+ Broadcast address: 192.168.12.127
Therefore all interface in the range of this network will join OSPF.

QUESTION 110
Which statements describe the routing protocol OSPF? (Choose three.)

A. It supports VLSM.
B. It is used to route between autonomous systems.
C. It confines network instability to one area of the network.
D. It increases routing overhead on the network.
E. It allows extensive control of routing updates.
F. It is simpler to configure than RIP v2.

Correct Answer: ACE
Section: (none)
Explanation

Explanation/Reference:
The OSPF protocol is based on link-state technology, which is a departure from the Bellman-Ford vector based algorithms used in traditional Internet routing protocols such as RIP. OSPF has introduced new concepts such as authentication of routing updates, Variable Length Subnet Masks (VLSM), route summarization, and so forth.
OSPF uses flooding to exchange link-state updates between routers. Any change in routing information is flooded to all routers in the network. Areas are introduced to put a boundary on the explosion of link-state updates. Flooding and calculation of the Dijkstra algorithm on a router is limited to changes within an area.

QUESTION 111
What is the default administrative distance of OSPF?

A. 90
B. 100
C. 110
D. 120

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
Administrative distance is the feature that routers use in order to select the best path when there are two or more different routes to the same destination from two different routing protocols. Administrative distance defines the reliability of a routing protocol. Each routing protocol is prioritized in order of most to least reliable (believable) with the help of an administrative distance value.
Default Distance Value Table
This table lists the administrative distance default values of the protocols that Cisco supports:

Route Source
Default Distance Values
Connected interface
0
Static route
1
Enhanced Interior Gateway Routing Protocol (EIGRP) summary route 5
External Border Gateway Protocol (BGP)
20
Internal EIGRP
90
IGRP
100
OSPF
110
Intermediate System-to-Intermediate System (IS-IS)
115
Routing Information Protocol (RIP)
120
Exterior Gateway Protocol (EGP)
140
On Demand Routing (ODR)
160
External EIGRP
170
Internal BGP
200
Unknown*
255

QUESTION 112
Refer to the exhibit.

```
RouterD# show ip interface brief
Interface        IP-Address      OK?  Method  Status  Protocol
FastEthernet0/0  192.168.5.3     YES  manual  up      up
FastEthernet0/1  10.1.1.2        YES  manual  up      up
Loopback0        172.16.5.1      YES  NVRAM   up      up
Loopback1        10.154.154.1    YES  NVRAM   up      up
```

Given the output for this command, if the router ID has not been manually set, what router ID will OSPF use for this router?

A. 10.1.1.2
B. 10.154.154.1
C. 172.16.5.1
D. 192.168.5.3

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
The highest IP address of all loopback interfaces will be chosen -> Loopback 0 will be chosen as the router ID.

QUESTION 113
Which two statements describe the process identifier that is used in the command to configure OSPF on a router? (Choose two.)

Router(config)# router ospf 1

A. All OSPF routers in an area must have the same process ID.
B. Only one process number can be used on the same router.
C. Different process identifiers can be used to run multiple OSPF processes
D. The process number can be any number from 1 to 65,535.
E. Hello packets are sent to each neighbor to determine the processor identifier.

Correct Answer: CD
Section: (none)
Explanation

Explanation/Reference:
Multiple OSPF processes can be configured on a router using multiple process ID's.
The valid process ID's are shown below:
Edge-B(config)#router ospf ?
<1-65535> Process ID

QUESTION 114
Which commands are required to properly configure a router to run OSPF and to add network 192.168.16.0/24 to OSPF area 0? (Choose two.)

A. Router(config)# router ospf 0

B. Router(config)# router ospf 1

C. Router(config)# router ospf area 0

D. Router(config-router)# network 192.168.16.0 0.0.0.255 0

E. Router(config-router)# network 192.168.16.0 0.0.0.255 area 0

F. Router(config-router)# network 192.168.16.0 255.255.255.0 area 0

Correct Answer: BE
Section: (none)
Explanation

Explanation/Reference:
In the router ospf
command, the ranges from 1 to 65535 so o is an invalid number -> but To configure OSPF, we need a wildcard in the "network" statement, not a subnet mask. We also need to assgin an area to this process -> .

QUESTION 115
What is the default maximum number of equal-cost paths that can be placed into the routing table of a Cisco OSPF router?

A. 2

B. 8

C. 16

D. unlimited

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
maximum-paths (OSPF)
To control the maximum number of parallel routes that Open Shortest Path First (OSPF) can support, use the maximum-paths command.
Syntax Description
maximum
Maximum number of parallel routes that OSPF can install in a routing table. The range is from 1 to 16 routes.
Command Default
8 paths

QUESTION 116
A network administrator is trying to add a new router into an established OSPF network. The networks attached to the new router do not appear in the routing tables of the other OSPF routers. Given the information in the partial configuration shown below, what configuration error is causing this problem?

Router(config)# router ospf 1

Router(config-router)# network 10.0.0.0 255.0.0.0 area 0

A. The process id is configured improperly.
B. The OSPF area is configured improperly.
C. The network wildcard mask is configured improperly.
D. The network number is configured improperly.
E. The AS is configured improperly.
F. The network subnet mask is configured improperly.

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:
When configuring OSPF, the mask used for the network statement is a wildcard mask similar to an access list. In this specific example, the correct syntax would have been "network 10.0.0.0 0.0.0.255 area 0."

QUESTION 117
A network administrator is troubleshooting the OSPF configuration of routers R1 and R2. The routers cannot establish an adjacency relationship on their common Ethernet link.

```
R1:    Ethernet0 is up, line protocol is up
       Internet address 192.168.1.2/24, Area 0
       Process ID 1, Router ID 192.168.31.33, Network Type BROADCAST, Cost: 10
       Transmit Delay is 1 sec, State DR, Priority 1
       Designated Router (ID) 192.168.31.33, Interface address 192.168.1.2
       No backup designated router on this network
       Timer intervals configured, Hello 5, Dead 20, Wait 20, Retransmit 5

R2:    Ethernet0 is up, line protocol is up
       Internet address 192.168.1.1/24, Area 0
       Process ID 2, Router ID 192.168.31.11, Network Type BROADCAST, Cost: 10
       Transmit Delay is 1 sec, State DR, Priority 1
       Designated Router (ID) 192.168.31.11, Interface address 192.168.1.1
       No backup designated router on this network
       Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
```

The graphic shows the output of the show ip ospf interface e0 command for routers R1 and R2. Based on the information in the graphic, what is the cause of this problem?

A. The OSPF area is not configured properly.
B. The priority on R1 should be set higher.
C. The cost on R1 should be set higher.
D. The hello and dead timers are not configured properly.
E. A backup designated router needs to be added to the network.
F. The OSPF process ID numbers must match.

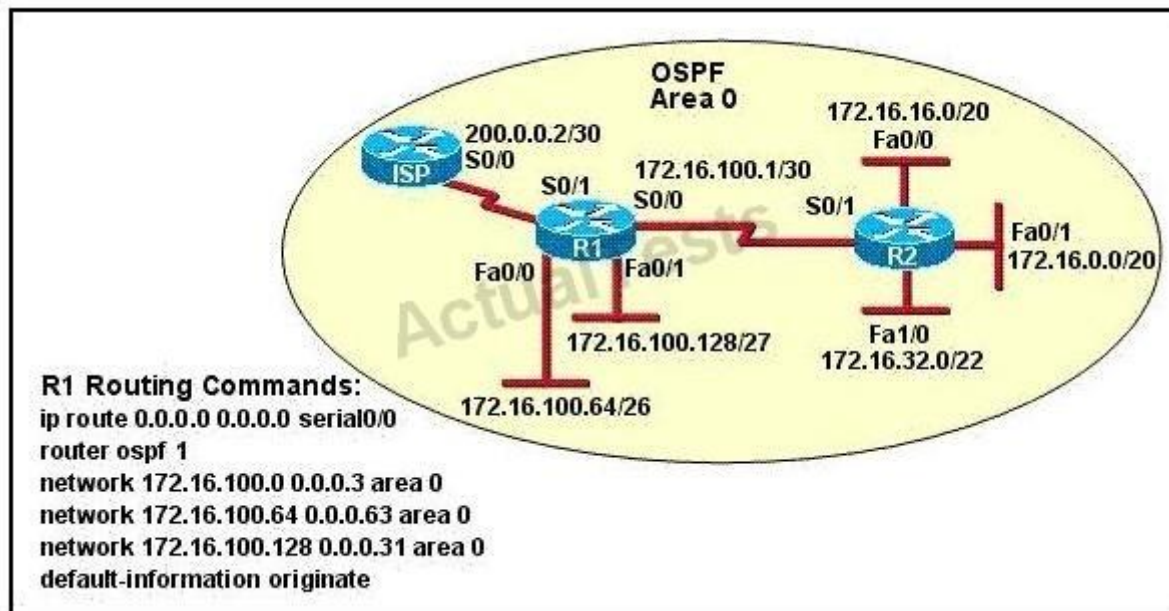**Correct Answer:** D
Section: (none)
Explanation

Explanation/Reference:
In OSPF, the hello and dead intervals must match and here we can see the hello interval is set to 5 on R1 and 10 on R2. The dead interval is also set to 20 on R1 but it is 40 on R2.

QUESTION 118
Refer to the exhibit.

Assume that all router interfaces are operational and correctly configured. In addition, assume that OSPF has been correctly configured on router R2. How will the default route configured on R1 affect the operation of R2?

A. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately.
B. Any packet destined for a network that is not referenced in the routing table of router R2 will be directed to R1. R1 will then send that packet back to R2 and a routing loop will occur.
C. Any packet destined for a network that is not directly connected to router R1 will be dropped.
D. The networks directly connected to router R2 will not be able to communicate with the 172.16.100.0, 172.16.100.128, and 172.16.100.64 subnetworks.
E. Any packet destined for a network that is not directly connected to router R2 will be dropped immediately because of the lack of a gateway on R1.

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
First, notice that the more-specific routes will always be favored over less-specific routes regardless of the administrative distance set for a protocol. In this case, because we use OSPF for three networks (172.16.100.0 0.0.0.3, 172.16.100.64 0.0.0.63, 172.16.100.128 0.0.0.31) so the packets destined for these networks will not be affected by the default route. The default route configured on R1 "ip route 0.0.0.0 0.0.0.0 serial0/0 will send any packet whose destination network is not

referenced in the routing table of router R1 to R2, it doesn't drop anything. These routes are declared in R1 and the question says that "OSPF has been correctly configured on router R2, so network directly connected to router R2 can communicate with those three subnetworks.
As said above, the default route configured on R1 will send any packet destined for a network that is not referenced in its routing table to R2; R2 in turn sends it to R1 because it is the only way and a routing loop will occur.

QUESTION 119
OSPF routing uses the concept of areas. What are the characteristics of OSPF areas? (Choose Three.)

A. Each OSPF area requires a loopback interface to be configured.
B. Areas may be assigned any number from 0 to 65535.
C. Area 0 is called the backbone area.
D. Hierarchical OSPF networks do not require multiple areas.
E. Multiple OSPF areas must connect to area 0.
F. Single area OSPF networks must be configured in area 1.

Correct Answer: BCE
Section: (none)
Explanation
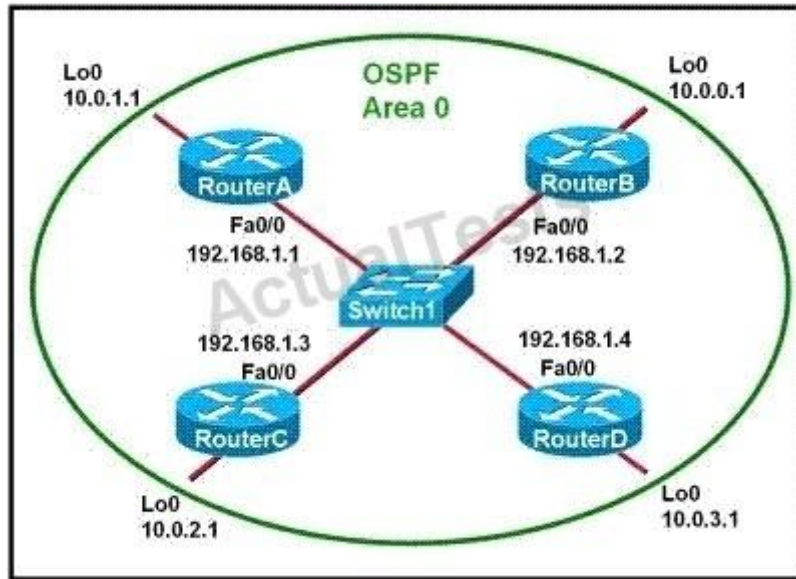
Explanation/Reference:
Definition of OSPF areas: An OSPF network may be structured, or subdivided, into routing areas to simplify administration and optimize traffic and resource utilization. Areas are identified by 32-bit numbers, expressed either simply in decimal, or often in octet-based dot-decimal notation, familiar from IPv4 address notation.

See discussion following Cisco Learning discussion.

https://learningnetwork.cisco.com/message/90832

QUESTION 120
Refer to the exhibit.

Which two statements are true about the loopback address that is configured on RouterB? (Choose two.)

A. It ensures that data will be forwarded by RouterB.
B. It provides stability for the OSPF process on RouterB.
C. It specifies that the router ID for RouterB should be 10.0.0.1.
D. It decreases the metric for routes that are advertised from RouterB.
E. It indicates that RouterB should be elected the DR for the LAN.

Correct Answer: BC
Section: (none)
Explanation

Explanation/Reference:
A loopback interface never comes down even if the link is broken so it provides stability for the OSPF process (for example we use that loopback interface as the router-id) - The router-ID is chosen in the order below:
+ The highest IP address assigned to a loopback (logical) interface.+ If a loopback interface is not defined, the highest IP address of all active router's physical interfaces will be chosen. -> The loopback interface will be chosen as the router ID of RouterB -

QUESTION 121
Which characteristics are representative of a link-state routing protocol? (Choose three.)

A. provides common view of entire topology
B. exchanges routing tables with neighbors
C. calculates shortest path
D. utilizes event-triggered updates
E. utilizes frequent periodic updates

Correct Answer: ACD
Section: (none)
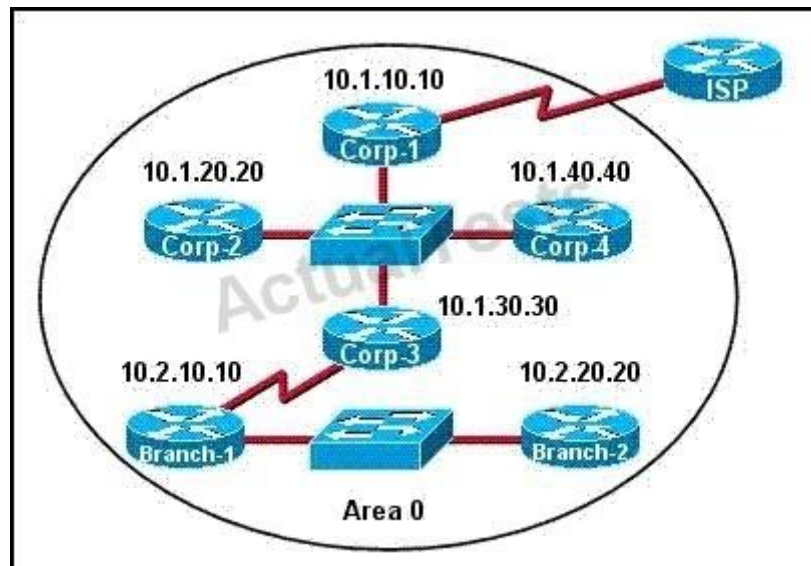**Explanation**

Explanation/Reference:
Each of routers running link-state routing protocol learns paths to all the destinations in its "area" so we can say although it is a bit unclear.
Link-state routing protocols generate routing updates only (not the whole routing table) when a change occurs in the network topology so
Link-state routing protocol like OSPF uses Dijkstra algorithm to calculate the shortest path -> . Unlike Distance vector routing protocol (which utilizes frequent periodic updates), link-state routing protocol utilizes event-triggered updates (only sends update when a change occurs) ->

QUESTION 122
The internetwork infrastructure of company XYZ consists of a single OSPF area as shown in the graphic. There is concern that a lack of router resources is impeding internetwork performance. As part of examining the router resources, the OSPF DRs need to be known. All the router OSPF priorities are at the default and the router IDs are shown with each router.

Which routers are likely to have been elected as DR? (Choose two.)

A. Corp-1
B. Corp-2
C. Corp-3
D. Corp-4
E. Branch-1
F. Branch-2

Correct Answer: DF
Section: (none)
Explanation

Explanation/Reference:
There are 2 segments on the topology above which are separated by Corp-3 router. Each segment will have a DR so we have 2 DRs.
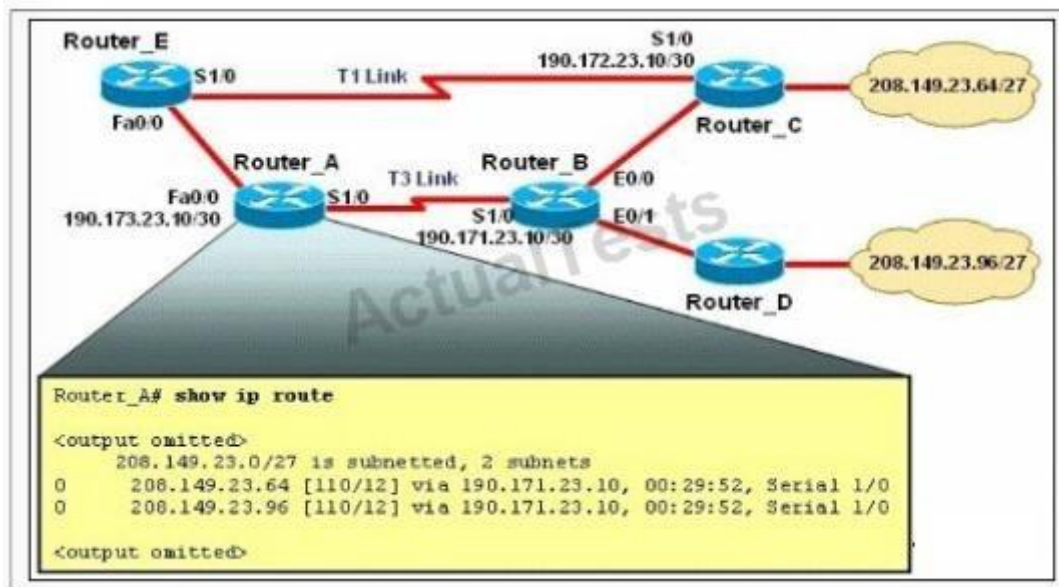To select which router will become DR they will compare their router-IDs. The router with highest (best) router-ID will become DR. The router-ID is chosen in the order below:

+ The highest IP address assigned to a loopback (logical) interface. + If a loopback interface is not defined, the highest IP address of all active router's physical interfaces will be chosen.

In this question, the IP addresses of loopback interfaces are not mentioned so we will consider IP addresses of all active router's physical interfaces. Router Corp-4 (10.1.40.40) & Branch-2 (10.2.20.20) have highest "active" IP addresses so they will become DRs.

QUESTION 123
Refer to the exhibit.

Router_E S1/0 S1/0 190.172.23.10/30 208.149.23.64/27
T1 Link Router_C
Fa0/0
Router_A Router_B E0/0
Fa0/0 S1/0 T3 Link S1/0 E0/1
190.173.23.10/30 190.171.23.10/30 208.149.23.96/27
Router_D

```
Router_A# show ip route

<output omitted>
      208.149.23.0/27 is subnetted, 2 subnets
O     208.149.23.64 [110/12] via 190.171.23.10, 00:29:52, Serial 1/0
O     208.149.23.96 [110/12] via 190.171.23.10, 00:29:52, Serial 1/0

<output omitted>
```

The network is converged.After link-state advertisements are received from Router_A, what information will Router_E contain in its routing table for the subnets 208.149.23.64 and 208.149.23.96?

A. 208.149.23.64[110/13] via 190.173.23.10, 00:00:07, FastEthemet0/0 208.149.23.96[110/13] via 190.173.23.10, 00:00:16, FastEthemet0/0
B. 208.149.23.64[110/1] via 190.172.23.10, 00:00:07, Serial1/0 208.149.23.96[110/3] via 190.173.23.10, 00:00:16, FastEthemet0/0
C. 208.149.23.64[110/13] via 190.173.23.10, 00:00:07, Serial1/0 208.149.23.96[110/13] via 190.173.23.10, 00:00:16, Serial1/0 208.149.23.96[110/13] via 190.173.23.10, 00:00:16, FastEthemet0/0
D. 208.149.23.64[110/3] via 190.172.23.10, 00:00:07, Serial1/0 208.149.23.96[110/3] via 190.173.23.10, 00:00:16, Serial1/0

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Router_E learns two subnets subnets 208.149.23.64 and 208.149.23.96 via Router_A through FastEthernet interface. The interface cost is calculated with the formula 108 / Bandwidth. For FastEthernet it is 108 / 100 Mbps = 108 / 100,000,000 = 1. Therefore the cost is 12 (learned from Router_A) + 1 = 13 for both subnets
->
The cost through T1 link is much higher than through T3 link (T1 cost = 108 / 1.544 Mbps = 64; T3 cost = 108 / 45 Mbps = 2) so surely OSPF will choose the path through T3 link -> Router_E will choose the path from Router_A through FastEthernet0/0, not Serial1/0. In fact, we can quickly eliminate answers B, C and D because they contain at least one subnet learned from Serial1/0 -> they are surely incorrect.

QUESTION 124
What information can be used by a router running a link-state protocol to build and maintain its topological database? (Choose two.)

A. hello packets
B. SAP messages sent by other routers
C. LSAs from other routers
D. beacons received on point-to-point links
E. routing tables received from other link-state routers
F. TTL packets from designated routers

Correct Answer: AC
Section: (none)
Explanation

Explanation/Reference:
Topic 9, Simulation