Exam Code: BL00100-101-E

Exam Name: Nokia Bell Labs End-to-End 5G Foundation Certification

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Question No: 1

What is the Unstructured Data Storage Function (UDSF)?

A. This network function exposes 5G Core Network functionalities available to 3rd parties, so that 3rd party capabilities and events may be securely exposed by the Network Exposure Function (NEF).

B. This network function is part of data repositories in the Common Data Layer. It stores 3GPP standardized data.

C. This network function is part of data repositories in the Common Data Layer and in opposition to the UDR, it stores non-standardized – Unstructured – data.

D. This network function stores or retrieves subscriptions, profiles, and authentication data to or from the data repositories. It offers services to the AMF, SMF, NEF and AUSF using the Service Based Interface.

Answer: C

Reference: https://webthesis.biblio.polito.it/12557/1/tesi.pdf

Explanation:

Question No: 2

Which of the following best defines what is meant by Network Slice isolation?

A. Security + Cloud isolation

B. Resource + Security isolation

C. Transport + Cloud isolation

D. Resource + Traffic isolation

Answer: B

Reference: https://www.gsma.com/futurenetworks/wp-content/uploads/2018/06/Network-Slicing-Use-Case- Requirements-_-FInal-.pdf

Explanation:

Question No: 3

Resource elasticity in Cloud enables which of the following actions? (Choose two.)

A. Relocate VMs between data centers when a fault is detected.

B. Deploy VMs across data centers when a new slice is needed.

C. Add resources to existing VMs when traffic is high.

D. Add VMs when traffic is high.

Answer: AD

Explanation:

Question No: 4

Which of the following is not a part of an E2E Network Slice?

A. Cloud Slice

B. Core Slice

C. Access Slice

D. Transport Slice

Answer: A

Explanation:

Question No: 5

What is the maximum distance of an Edge Cloud from end-user?

A. 1,000 KM

B. 5,000 KM

C. 10,000 KM

D. 300 KM

Answer: A

Explanation:

Question No: 6

You and a colleague are discussing the challenges to be resolved in order to make digitization and automation a reality in all industries. He is arguing that the solution is to have faster access connectivity, but you don't agree. You are trying to convince him of the need for an end-to-end solution. The new 5G network should be built end-to-end to enable industries' quest for value. What arguments can you provide to support your position?

A. Increasing throughput is not enough. A faster and automated transport network, a distributed cloud where applications would run depending on their latency and reliability requirements, a core network that automatically handles any type of access, and a security framework to guarantee the security in every layer of the network are also needed.

B. The network consists of many layers that include access, transport, core, cloud, and all of the applications running in the cloud. Increasing throughput in access is not enough. The bit rate needs to be increased in all of the other layers as well.

C. Increasing the access throughput might be worthwhile but applications that support a higher bit rate should also be a consideration.

D. Increasing the throughput is enough. There is no need to change the network end-to-end.

Answer: A

Explanation:

Question No: 7

What is the main benefit of Cloud RAN?

A. Increased cell coverage

B. Better latency

C. Reduced cost by centralizing some radio functionalities

D. Increase radio throughput

Answer: D

Reference: https://www.fujitsu.com/us/Images/CloudRANwp.pdf (4)

Explanation:

Question No: 8

What is the primary benefit of Edge Cloud?

A. Lower latency

B. Higher Availability

C. Larger Bandwidth

D. Lower Cost

Answer: A

Reference: https://www.nokia.com/networks/portfolio/edge-cloud/

Explanation:

Question No: 9

The network of the future is the key to supporting the digitization and automation of many industries. This network should support diverse requirements from different applications using it. To do that, the network should have a new architecture. Which of the following best describe the elements of the new 5G end-to-end network architecture?

A. Wireless Access, Optical Transport, and a dedicated Core Network for wireless access running in a Central Cloud.

B. Multiple access types (not only wireless), Optical Transport, Multi-cloud, and dedicated Core for every type of access.

C. Public sector element, a smart city element, a health element, a transport and logistics element, and an industrial element.

D. Massive Scale Access combining many wireless and wired access types, Smart Network Fabric as transport (combining optical and IP network elements, controlled by SDN), a Universal Adaptive Core network supporting all access types, a Multi-cloud system including central, regional, edge, public, private, and hybrid cloud, and Automation and Analytics providing flexibility in the network to serve different applications.

Answer: D

Explanation:

Question No: 10

Which of the following statements about 5G Transport is incorrect?

A. Widely diverse end to end services will require the ability to create a Transport Slice with guaranteed SLAs.

B. Ultra Reliable Machine to Machine communication will require dependable low latency communication.

C. Internet of things devices will require a massive increase in network connectivity.

D. Explosive traffic growth will require statically defined manually configured end to end QoS based services.

Answer: C

Explanation:

Question No: 11

Which one of the following requires a network service package defined in a catalog?

A. Cloud software platform

B. Cloud infrastructure software

C. Cloud orchestration

D. Software defined network

Answer: C

Explanation:

Question No: 12

What does the acronym SOAR stand for?

A. Security Orchestration Automation and Recovery

B. Security Optimization Accountability Recovery

C. Security Orchestration Automation and Response

D. Securitization, Optimization, Access Control, and Resiliency

Answer: C

Reference: https://www.fireeye.com/products/helix/what-is-soar.html

Explanation:

Question No: 13

Which of the following is not a component of the 5G Flexible RAN architecture?

A. Radio Unit

B. Distributed Unit

C. Centralized Unit

D. Optical Unit

Answer: D

Reference: https://www.hindawi.com/journals/wcmc/2019/5264012/

Explanation:

Question No: 14

A company is planning to offer services to different cities worldwide so drones can be used to scan disaster areas to help identify victims' locations quickly, organize evacuations efficiently, and save lives. Drones will be connected to a 5G network. The company is planning to offer two applications running in the cloud – one to manage drones through remote control while the other offers live video streaming to drone operators. As a 5G professional, you are asked what are the network requirements for those two applications?

A. The drone control application needs very low latency to maneuver around obstacles, while the video application would need less latency. Both applications would be running in the central cloud.

B. The drone control application needs low latency and high reliability from the network and should run in the edge cloud. The video application needs higher throughput but it is not sensitive from the latency and reliability point of view. It can run in a central cloud.

C. Both applications should run in the edge cloud because the drone control and video applications both require low latency and high reliability from the network.

D. The drone control application should run through a central cloud. The video streaming application should run in the edge cloud because it carries much data, and that is expensive to run through the central cloud.

Answer: B

Explanation:

Question No: 15

What is the purpose of the secondary authentication feature?

A. To improve authentication between the User Equipment and the 5G Core.

B. To improve authentication when connecting to different network slices.

C. To authenticate the User Equipment coming from an untrusted non-3GPP access (N3IWF).

D. To authenticate the User Equipment with an external data network.

Answer: A

Explanation:

Question No: 16

Which of the following technologies drive 5G increased throughput capacity? (Choose three.)

A. MU-MIMO and beamforming

B. Higher spectral efficiency

C. Network Slicing

D. Multi-connectivity per User Equipment

Answer: ABC

Explanation:

Question No: 17

What are the benefits of the stateless or state-efficient aspects of network functions?

A. Avoid massive database corruption

B. Provide real time access to the databases

C. Enable scalability and extreme resiliency in the 5G Core

D. Ensure the database integrity

Answer: C

Reference: https://www.nokia.com/about-us/news/releases/2018/01/29/nokia-implements-futurex-network- architecture-for-5g-to-deliver-breakthrough-network-performance-and-reduce-costs/

Explanation:

Question No: 18

Which of the following defines a vertical Network Slice?

A. When it serves a given customer for a specific purpose, such as a national energy network.

B. When it cross all the network layers from the radio up to the core.

C. When it serves a given common purpose, for a use case with a defined QoS (eg a use case in transportation, in energy).

D. When it operates on the same layer of the ISO/OSI model.

Answer: A

Reference: https://www.gsma.com/futurenetworks/wp-content/uploads/2018/06/Network-Slicing-Use-Case- Requirements-_-FInal-.pdf

Explanation:

Question No: 19

What are the benefits of traffic engineering in Transport networks? (Choose three.)

A. Scaling access points

B. Better utilization of network capacity

C. Traffic steering

D. Resiliency

Answer: BCD

Explanation:

Question No: 20

Which of the following is a valid NFV attack?

A. Hijack attack on hypervisor

B. DDoS attack on the SDN switches

C. Poor NFV implementation

D. Hypervisor resources leakage

Answer: A

Reference: https://www.etsi.org/deliver/etsi_gs/nfv-sec/001_099/001/01.01.01_60/gs_nfvsec001v010101p.pdf

Explanation:

Question No: 21

What is Unified Data Management (UDM)?

A. This network function stores or retrieves subscriptions, profiles and authentication data to or from the data repositories. It offers services to the AMF, SMF, NEF and AUSF using the Service Based Interface.

B. This network function supports authentication for 3GPP and non-3GPP accesses.

C. This network function is part of data repositories in the Common Data Layer and in opposition to the UDR, it stores non-standardized unstructured data.

D. This network function provides registration and discovery functionality to enable other network functions/ services to discover and communicate with each other.

Answer: B

Reference:

https://docs.oracle.com/communications/F25434_01/docs.10/UDM%20User%27s%20Guide/ GUIDF0678B8F-501C-4BE5-A0D7-141CED2DFE70.htm

Explanation:

Question No: 22

In a 5G Transport network, the encryption protection of the user and control plane are provided by which of the following?

A. IPSec

B. Access Control List

C. SSH

D. X25

Answer: A

Reference: https://www.ericsson.com/en/security/a-guide-to-5g-network-security

Explanation:

Question No: 23

Imagine that you are defining the 5G network requirements for the Industrial Automation of a port, what is the set of 5G technology enablers and horizontal applications that makes sense?

A. Automation of cargo handling and integration with the logistics chain is an Autonomous Container Transport vehicles that requires 5G NR, Edge cloud and High SLA slices.

B. Automation of cargo handling and integration with shorter ship turnaround times through improved predictability of operations is a video inspection system of important large infrastructure that requires 5G NR, FWA and High SLA slices.

C. Automation of cargo handling and integration with the logistics chain is an Autonomous Container Transport vehicles that requires 5G NR, central cloud and FWA.

D. Automation of cargo handling and integration with shorter ship turnaround times through improved predictability of operations is a video inspection system of important large infrastructure that requires 5G NR and central cloud.

Answer: A

Explanation:

Question No: 24

In terms of scalability, flexibility, and capacity, which of the following would overcome 4G limitations?

A. Service based architecture, stateless network functions, Cloud-ready network functions and modular network functions.

B. Client/Server architecture, stateless network functions, Cloud-ready network functions and modular network functions.

C. Client/Server architecture, Cloud-ready network functions, and modular network functions.

Answer: B

Explanation:

Question No: 25

When considering Cloud and Transport orchestration, evaluate whether the following statement is true or false: NFVO is to Cloud what SDN is to Transport.

A. False

B. True

Answer: A

Explanation:

Question No: 26

Which of the following is not a benefit of Network Slicing?

A. Priority between different flows

B. Privacy and segmentation between flows

C. Recovery of network flows when they fail

D. Differentiated QoS flows, for different services

Answer: C

Explanation:

Question No: 27

What is the role of 5G in meeting the automation needs of Industry 4.0?

A. 5G plays a minor role on Industry 4.0 because the requirements are mainly focused on mMTC and IoT.

B. 5G requirements for Industry 4.0 are mainly focused on Ultra high bandwidth needs.

C. 5G plays an important role on Industry 4.0 because it enables the cloud automation with baremetal platforms.

D. 5G requirements for Industry 4.0 are mainly focused on ultra low latency characteristics but also from high throughput and massive connectivity.

Answer: D

Explanation:

Question No: 28

Which of the following drive 5G higher reliability?

A. Higher spectral efficiency

B. Multi-connectivity per User Equipment

C. Connectionless radio access

D. Lower Time Transmission Interval (TTI)

Answer: A

Reference:

https://learningstore.nokia.com/doc/5g/5G_Foundation_Study_Guide_BL00125_M_%202002.pdf

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Explanation:

Question No: 29

Your manager started a brainstorming session during a meeting on how automation can be driven in the network. He asks what tools can be used to increase automated services in the network. What would you answer be?

A. We need to find a software company that will write software to automate the network services.

B. We can create rule-based automation. We can also use Artificial Intelligence and Machine Learning to automate all network services.

C. We can write scripts that will be executed at certain times when a specific event happens and the service will be automated in this way.

D. We can use big data. It is the main tool that should be used for network automation.

Answer: B

Explanation:

Question No: 30

What is the best solution for deploying an optimal network function distribution?

A. Using duplicated Virtual Network Functions

B. Using Virtual Network Functions to control the routing

C. Using Virtual Network Functions orchestrated across various Cloud Data Centers

D. Using Virtual Network Functions in Access

Answer: C

Explanation:

Question No: 31

Which of the following statements about Network Slicing are correct? (Choose three.)

A. Multiple slices create multiple virtual network instances.

B. Unique Quality of Service can be allocated to a given slice.

C. Specific resources can be allocated to a given slice.

D. Network Slicing is a way to physically partition the common network infrastructure.

Answer: ABC

Explanation:

Question No: 32

Which of the following are 4G limitations that justify a roll-out to 5G? (Choose three.)

A. Low peak and end-user-experience throughput

B. Low reliability

C. High latency

D. Beamforming is not supported

Answer: ABC

Reference: https://www.raconteur.net/technology/5g/4g-vs-5g-mobile-technology/

Explanation:

Question No: 33

Is it possible for a User Equipment to connect simultaneously to multiple slices in 5G?

A. No

B. Yes

Answer: B

Reference: https://www.researchgate.net/publication/340976923_Slice_Selection_In_5G_Networks_Novel_Approach_for_Accessing_Multiple_Slices_Simultaneously

Explanation:

Question No: 34

What does 5G bring to Industry 4.0? (Choose two.)

A. 5G will generate a huge amount of data and Information Technology will provide the computing platform with analytics and AI.

B. 5G provides the connectivity (bandwidth, latency and reliability) needed to exchange data for OT and IT functionality.

C. 5G brings nothing to Industry 4.0.

D. 5G will generate a huge amount of data with mMTC and IT platforms are expected to suffer from this.

Answer: AB

Reference: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwij3MSz5eTvAhUUQEEAHVYtAJkQFjAAegQIAxAD& url=https%3A%2F%2Fwww.mdpi.com%2F2673-4001%2F1%2F1%2F5%2Fpdf&usg=AOvVaw2pcA- zrM3BgCPfsBYztcsA

Explanation:

Question No: 35

What functionality is applied by SDN to find an alternative path in case of failure in the Transport Network?

A. Path Correlation Engine

B. Alternative Route Finding

C. Alternative Path Computing

D. Path Computation Engine

Answer: C

Reference: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj01tmp5uTvAhUQO8AKHbvUB5c QFjAAegQIBxAD&url=https%3A%2F%2Fwww.mdpi.com%2F2071-1050%2F12%2F10%2F4255% 2Fpdf&usg=AOvVaw2Jd6iravRnpP8tfxjIdKWK

Explanation:

Question No: 36

Which of the following drive 5G low latency? (Choose two.)

A. Support of up to 1 billion of IoT and sensors devices per km2

B. Lower Time Transmission Interval (TTI)

C. Higher spectral efficiency

D. Edge Clouds

Answer: BC

Explanation:

Question No: 37

What are the five key features of 5G Core?

A. Dynamic Control plane, Adaptive Architecture, Converged-Access-Network, Stateless and Network Self- healing

B. Dynamic Control plane, Service Based Architecture, Multi-Access-Network, State-efficiency and Network Slicing

C. Dynamic Control plane, Adaptive Architecture, Multi-Access-Network, Stateless and Network Slicing

D. Control and User Planes Separation, Service Based Architecture, Multi-Access-Network, Stateefficiency and Network Slicing

Answer: D

Explanation:

Question No: 38

What is the “sweet spot” for Industry 4.0?

A. The “sweet spot” for industry 4.0 is the intersection of URLLC, eMBB and mMTC.

B. The “sweet spot” for industry 4.0 is a double-digit revenue growth.

C. The “sweet spot” for industry 4.0 is a deployment strategy for delivering the required capacity and coverage for industrials.

D. The “sweet spot” for industry 4.0 is the intersection of operational, information and communications technologies.

Answer: D

Explanation:

Question No: 39

You are working in a logistics company. Your manager is telling you that automation is very important to create more opportunities for the company. His idea is to deliver parcels using drones. With this in mind, he asks you if a 4G network provides good connectivity for controlling the delivery drones.

How would you answer him and why?

A. Yes, 4G provides a connectivity network but, it is quite expensive. WIFI may be a preferable option.

B. No, a 4G network is not a good choice for drone control because big operators (with whom we cannot deal) mainly deliver it.

C. No, a 4G network cannot deliver the required connectivity. It is not able to guarantee the latency and reliability required for drone control.

D. Yes, the drone control application can be hosted in the cloud and the 4G network can provide the speed needed to reach the application and control the drones.

Answer: D

Explanation:

Question No: 40

Which of the following statements are applicable to the technology of massive MIMO?

(Select 3)

A. Several data flows are sent at the same time on the same frequency.

B. The signals on each antenna are made orthogonal.

C. The data flows are sent at the same time on different frequencies.

D. Transmit diversity is used in case of poor radio conditions.

Answer: ABD

Explanation: