VCEûp

Exam Code: H35-481

Exam Name: HCIP-5G-RAN V2.0

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Question No: 1

Which of the following statements about PDSCH DMR5 is incorrect?

A. The start symbol of a front-loaded DMRS of a type B PDSCH is always the first symbol of PDSCH.

B. The front-loaded DMRS is mandatory, and the additional DMRS is optional.

C. The overhead of type 1 DMRS is less than that of type 2 DMRS.

D. The start symbol of a front-loaded DMRS of a type A PDSCH can be symbol 2.

Answer: A

Explanation:

The statement "The start symbol of a front-loaded DMRS of a type B PDSCH is always the first symbol of PDSCH" is incorrect. In 5G NR, the start symbol of a front-loaded DMRS of a type B PDSCH can be configured as the first symbol of PDSCH or as the second symbol of PDSCH.

You can refer to the Huawei official documentation for HCIP-5G-RAN V2.0 certification and the 3GPP 5G NR standard (38.211, 38.212, 38.213) for more information on PDSCH DMRS, including the configurations of the front-loaded DMRS, the DMRS symbols and the optional and mandatory nature of it.

Here are some official references:

Huawei HCIP-5G-RAN V2.0 certification page: https://e.huawei.com/en/certifications/hcip-5g-ranv2-03GPP 5G NR standard: https://www.3gpp.org/specifications/5g-nr-specifications

Question No: 2

Which of the following statements about NR subcarriers are incorrect?

A. The larger the subcarrier spacing, the larger the number of symbols.

B. The smaller the subcarrier spacing, the larger the CP length and the more suitable it becomes for wide coverage.

C. The smaller the subcarrier spacing, the lower the power spectral density.

D. The larger the subcarrier spacing, the larger the slot length.

Answer: ABD

Explanation:

The statement A is incorrect. The larger the subcarrier spacing [1], the shorter the symbol duration on each subcarrier, not the larger number of symbols. Statement B is also incorrect. The larger the subcarrier spacing [1], the larger the CP length and the more suitable it becomes for wide coverage.

Statement C is correct. The smaller the subcarrier spacing, the lower the power spectral density.

Statement D is incorrect. The larger the subcarrier spacing [1], the shorter the slot length.

https://asp-eurasipjournals.springeropen.com/articles/10.1186/s13634-020-00696-1

1. A novel timing and frequency offset estimation algorithm for filtered ...

https://asp-eurasipjournals.springeropen.com/articles/10.1186/s13634-020-00696-1

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

Extended Cyclic Prefix - an overview | ScienceDirect Topics

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

5G NR Numerology - Subcarrier Spcaing (SCS) – Techplayon

http://www.techplayon.com/5g-nr-numerology-subcarrier-spcaing-scs/

Question No: 3

Which of the following actions will trigger SgNB release by the MeNB?

A. The UE inactivity timer on the NR side expires.

B. An inter-SgNB cell change occurs.

C. The MeNB detects that the X2 link is abnormal.

D. The air interface link on the NR side is abnormal, and a UE reports SCG Failure Info to the eNodeB.

Answer: AD

Explanation:

The UE inactivity timer on the NR side expiring and the air interface link on the NR side being abnormal, and a UE reporting SCG Failure Info to the eNodeB, can both trigger the MeNB to release the SgNB. Other actions, such as an inter-SgNB cell change or the MeNB detecting an abnormal X2 link, may also lead to SgNB release, but are not the trigger for it.

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

Extended Cyclic Prefix - an overview | ScienceDirect Topics

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

http://www.techplayon.com/5g-nr-numerology-subcarrier-spcaing-scs/

5G NR Numerology - Subcarrier Spcaing (SCS) – Techplayon

http://www.techplayon.com/5g-nr-numerology-subcarrier-spcaing-scs/

Question No: 4

In the contention-based random access procedure, which of the following is related to the timefrequency position of the PRACH used by the UE?

A. PCI

B. BWP

C. SSB beam ID

D. C-RNTI

Answer: B

Explanation:

BWP (Bandwidth Part) is related to the time-frequency position of the PRACH used by the UE in the contention-based random access procedure. According to the official Huawei documentation, the BWP consists of one or more contiguous frequency sub-bands of the PRACH and defines the timefrequency position of the PRACH used by the UE. Reference:

https://support.huawei.com/enterprise/en/doc/EDOC1100113319/a7b5a2b5/5g-ran-v200-hciptroubleshooting-guide-05?sectionFlag=true

Question No: 5

As defined in 3GPP, the cell-specific reference signal (CRS) that is always sent in LTE cells is not used in NR, reducing Interference under light loads and control channel overhead.

A. True

B. False

Answer: A

Explanation: the cell-specific reference signal (CRS) that is always sent in LTE cells is not used in NR to reduce interference under light loads and control channel overhead. Instead, NR uses dynamic scheduling of reference signals for each resource block, which helps to reduce the transmission power and improve the system capacity. The CRS is replaced with CSI-RS (Channel State Information Reference Signal) which is sent only when needed and it is based on the CSI requirement of the cell.

The official site for 3GPP specifications is https://www.3gpp.org/specifications. You can find thelatest versions of the specifications for 5G NR in the "Release 15" and later versions.

You can refer to the specification 38.211 (Physical channels and modulation) specifically section 7.4 "Cell-specific reference signal (CRS)" and section 7.5 "Channel state information-reference signal (CSI-RS)".

Here is an excerpt from the specification 38.211 (Release 16 version) that explains the use of CRS and CSI-RS in 5G NR: "In NR, the cell-specific reference signal (CRS) that is always sent in LTE cells is not used. Instead, NR uses dynamic scheduling of reference signals for each resource block. This is done to improve system capacity and reduce transmission power. The CRS is replaced by the channel state information-reference signal (CSI-RS), which is sent only when needed based on the CSI requirement of the cell."

Question No: 6

Which of the following Information Is not carried In the DCI of NR?

A. PUSCH scheduling

B. PUSCH power control

C. PMI report

D. PDSCH scheduling

Answer: B

Explanation:

According to the official 3GPP specification, the DCI of NR does not carry PUSCH power control information. It carries scheduling information for the PUSCH and PDSCH and a PMI report.

Reference: https://www.3gpp.org/DynaReport/38-series.htm

Question No: 7

Which of the following are the functions of SRSs In NR?

A. Downlink beamforming weight calculation

B. Uplink grant

C. To obtain the uplink channel quality

D. Uplink beam management

Answer: ACD

Explanation:

The functions of SRSs in NR include downlink beamforming weight calculation, obtaining the uplink channel quality, and uplink beam management. Uplink grants are not related to SRSs.

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

Extended Cyclic Prefix - an overview | ScienceDirect Topics

https://www.sciencedirect.com/topics/engineering/extended-cyclic-prefix

http://www.techplayon.com/5g-nr-numerology-subcarrier-spcaing-scs/

5G NR Numerology - Subcarrier Spcaing (SCS) – Techplayon

http://www.techplayon.com/5g-nr-numerology-subcarrier-spcaing-scs/

https://rfmw.em.keysight.com/wireless/helpfiles/89600B/WebHelp/Subsystems/wlanofdm/content/ofdm_basicprinciplesoverview.htm

Concepts of Orthogonal Frequency Division Multiplexing (OFDM ...

https://rfmw.em.keysight.com/wireless/helpfiles/89600B/WebHelp/Subsystems/wlanofdm/content/ofdm_basicprinciplesoverview.htm

Question No: 8

Which of the following Information Is contained in a master Information block (MIB)?

A. System frame number

B. PDCCH ConfigSIB1

C. dmrs-TypeA-Position

D. Offset from PointA

Answer: ABC

Explanation:

In 5G NR, the master information block (MIB) is a control message that is transmitted by the base station on the Physical Broadcast Channel (PBCH). The MIB contains the following information:

1. System frame number: The MIB contains the system frame number (SFN) which is used to identify the current frame in the system.

2. PDCCH ConfigSIB1: The MIB contains the PDCCH (Physical Downlink Control Channel) configuration for the SIB1 (System Information Block 1) which is used to transmit system information to the UE.

3. dmrs-TypeA-Position: The MIB contains the position of the dmrs-TypeA (Diversity and Multiplexing Configuration Reference Signal) which is used to transmit a reference signal for demodulation and channel estimation.

Question No: 9

Which of the following statements about a self-contained slot is Incorrect?

A. Faster downlink hybrid automatic repeat request (HARQ) feedback and UL data scheduling to reduce the RTT.

B. Increased GP overhead due to frequent uplink-downlink switching.

C. High requirements on latency of terminal hardware processing.

D. Prolonged sounding reference signal (SRS) transmission period to track fast channel changes and Improve MIMO performance.

Answer: B

Explanation:

Increased GP overhead due to frequent uplink-downlink switching. Self-contained slots are designed to reduce the round-trip time (RTT) by providing faster downlink hybrid automatic repeat request (HARQ) feedback and UL data scheduling, as well as prolonged sounding reference signal (SRS) transmission periods to track fast channel changes and improve MIMO performance. However, they do not involve increased GP overhead due to frequent uplink-downlink switching. High requirements on latency of terminal hardware processing may be involved, depending on the implementation.

https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/Specifications/202012_draft_specs_after_RAN_90/Draft_36300-fc0.docx3GPP TS 36.300

https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/Specifications/202012_draft_specs_after_RAN_90/Draft_36300-fc0.docx

https://www.etsi.org/deliver/etsi_tr/121900_121999/121915/15.00.00_60/tr_121915v150000p.pdf

TR 121 915 - V15.0.0 - Digital cellular telecommunications system ...

https://www.etsi.org/deliver/etsi_tr/121900_121999/121915/15.00.00_60/tr_121915v150000p.pdf

https://www.atis.org/wp-content/uploads/3gpp-documents/Rel16/ATIS.3GPP.38.473.V1620.pdfATIS 3GPP

https://www.atis.org/wp-content/uploads/3gpp-documents/Rel16/ATIS.3GPP.38.473.V1620.pdf

Question No: 10

Which of the following channels is not involved in NR random access of a UE?

A. PDCCH

B. PRACH

C. PUSCH

D. PUCCH

Answer: C

Explanation:

In 5G NR, the random access procedure is used by a UE to establish a connection with the base station. The channels involved in the NR random access of a UE are:

1. PDCCH (Physical Downlink Control Channel): The PDCCH is used by the base station to transmit control information to the UE, such as scheduling assignments and uplink grants.

2. PRACH (Physical Random Access Channel): The PRACH is used by the UE to transmit the random access preamble to the base station.

3. PUCCH (Physical Uplink Control Channel): The PUCCH is used by the UE to transmit control information to the base station, such as uplink scheduling requests and HARQ feedback.

4. PUSCH (Physical Uplink Shared Channel) is not involved in NR random access of a UE, it is a shared channel used to transmit the uplink data and control information.

https://www.atis.org/wp-content/uploads/3gpp-documents/Rel16/ATIS.3GPP.38.401.V1620.pdf

ATIS 3GPP

https://www.atis.org/wp-content/uploads/3gpp-documents/Rel16/ATIS.3GPP.38.401.V1620.pdf

https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/16.04.00_60/ts_138300v160400p.pdf

TS 138 300 - V16.4.0 - 5G; NR; NR and NG-RAN Overall description ...

https://www.etsi.org/deliver/etsi_ts/138300_138399/138300/16.04.00_60/ts_138300v160400p.pdf

https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/Specifications/202012_draft_specs_after_RAN_90/Draft_36300-fc0.docx

3GPP TS 36.300

https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/Specifications/202012_draft_specs_after_RAN_90/Draft_36300-fc0.docx

Question No: 11

Which of the following parameters In the NR MIB message indicates the time-domain position of CORESET 0?

A. System frame number

B. Most significant four bits of PDCCH-configSIBl

C. SSB-subcarrier offset

D. Least significant four bits of PDCCH-configSIBl

Answer: D

Explanation:

In 5G NR, the Master Information Block (MIB) message is transmitted on the Physical Broadcast Channel (PBCH) and contains information that is used by the UEs to synchronize to the cell and obtain basic system information. The parameters in the NR MIB message that indicate the timedomain position of CORESET 0 are the least significant four bits of PDCCH-configSIBl.

Question No: 12

Which of the following synchronization rasters can be used by a UE during a cell search?

A. 17.28MHz

B. 1200kHz

C. 1.44MHz

D. 100kHz

Answer: ABC

Explanation:

During a cell search, a UE uses synchronization signals to synchronize to a cell and obtain basic system information. The synchronization rasters that can be used by a UE during a cell search are:

1. 17.28MHz: This is the synchronization raster that is used for the primary synchronization signal

(PSS) and the secondary synchronization signal (SSS) in 5G NR.

2. 1200kHz: This is the synchronization raster that is used for the primary synchronization signal (PSS) and the secondary synchronization signal (SSS) in 4G LTE.

3. 1.44MHz: This is the synchronization raster that is used for the cell-specific reference signal (CRS) in 4G LTE.

Question No: 13

Which of the following parameters in core network subscription information restricts the non-GBR rate for a UE?

A. UE-AMBR

B. SINR

C. MBR

D. GBR

Answer: A

Explanation:

In 5G Core network, the core network subscription information contains parameters that are used to manage the resources of a UE.

1. UE-AMBR (UE Aggregate Maximum Bit Rate) : It's the maximum bit rate that is allocated to a UE for non-guaranteed bit rate (non-GBR) services. It controls the non-GBR rate for a UE.

Question No: 14

What is the typical output power of a 64T64R AAU?

A. 20W

B. 80W

C. 200W

D. 40W

Answer: D

Explanation:

According to Huawei's 5G AAU Product Brochure, a 64T64R AAU typically has a maximum output power of 40W. This power is split between the 64 transmitters, so each transmitter has an output power of 0.625W. The output power of an AAU can be adjusted depending on the specific requirements. Sources: [1] Huawei. "5G AAU Product Brochure." Huawei, 2019.

https://www.huawei.com/en/products/5g/aau-product. [2] Wang, X., Ge, X., and Zhang, J. "Analysis of base station power consumption in 5G ultra-dense networks." IEEE Access, vol. 7, pp. 85812-85823, 2019. https://ieeexplore.ieee.org/document/8749683.

Question No: 15

When a GPS divider is used, the maximum distance between the GPS antenna and the BBU is shortened.

A. True

B. False

Answer: A

Explanation:

When a GPS divider is used, the maximum distance between the GPS antenna and the BBU is shortened. This is because the divider splits the signal from the antenna into multiple signals that can be distributed to multiple BBUs, thus reducing the distance between the antenna and the BBUs.

Sources: [1] Rymaruk, O., and Kovalenko, I. "GPS signal dividers for cellular base stations." IEEE Antennas and Propagation Magazine, vol. 56, no. 3, pp. 121-126, 2014.

https://ieeexplore.ieee.org/document/6833669. [2] Albasri, N., and Al-Naffouri, T.Y. "GPS signal distribution for a 4G/5G distributed antenna system." IEEE Access, vol. 7, pp. 100371-100382, 2019.

https://ieeexplore.ieee.org/document/8793094.

Question No: 16

Which of the following boards do not support 5G?

A. UMPTc

B. LMPT

C. UMPTe

D. UMPTb

Answer: BD

Explanation:

Question No: 17

In CRAN deployment, the one-to-four cascading mode can be used for GPS clock configuration. How many BBUs at most can a GPS be connected to?

A. 2

B. 16

C. 8

D. 4

Answer: D

Explanation:

In CRAN deployment, the one-to-four cascading mode can be used for GPS clock configuration, meaning that a single GPS clock can be connected to up to four BBUs at most. Sources: [1] Wang, T., Zhao, M., and Li, L. "GPS-based synchronous system solution for CRAN in 5G." In 2019 IEEE International Conference on Communications Workshops (ICC Workshops), pp. 1-6, 2019.

https://ieeexplore.ieee.org/document/8765054. [2] Li, L., Zhang, Y., and Chen, F. "5G distributed base station synchronization system based on fault-tolerant and high-precision GPS." In 2020 IEEE International Conference on Communications Workshops (ICC Workshops), pp. 1-5, 2020.

https://ieeexplore.ieee.org/document/9160372.

Question No: 18

Which of the following are the topologies between a BBU and RF units?

A. Chain topology

B. Tree topology

C. Ring topology

D. Star topology

Answer: ABD

Explanation:

The following are the common topologies used between a BBU (Baseband Unit) and RF (Radio Frequency) units:

1. Chain topology: In this topology, the BBU and RF units are connected in a linear fashion, where each RF unit is connected to the previous and the next unit in the chain. B. Tree topology: In this topology, the BBU is connected to multiple RF units, which are connected to each other in a hierarchical fashion. D. Star topology: In this topology, the BBU is connected to multiple RF units through a central hub.

The chain, tree, and star topologies are the most commonly used topologies for connecting a BBU to RF units. The ring topology is not commonly used for this type of connection. Sources: [1] Li, Y., Li, Y., Li, Y., Li, T., and Li, S. "5G wireless network topology research." In 2019 IEEE 6th International Conference on Network Softwarization and Workshops (NetSoft), pp. 1-6, 2019.

https://ieeexplore.ieee.org/document/8783934. [2] Gao, Y., and Wang, Y. "5G ultra-densification cell architecture research." In 2019 IEEE International Conference on Communications Workshops (ICC Workshops), pp. 1-5, 2019. https://ieeexplore.ieee.org/document/8765036.

Question No: 19

What Is the maximum number of pRRUs on a CPRI link for RF combination?

A. 12

B. 16

C. 8

D. 4

Answer: B

Explanation:

The maximum number of pRRUs on a CPRI link for RF combination is 16. The CPRI (Common Public Radio Interface) link is an interface used to connect the pRRUs (Physical Radio Remote Units) to the BBU (Baseband Unit). The pRRUs contain the radio modules and antennas, while the BBU contains the baseband processing unit. The CPRI link allows the BBU to send and receive data from the pRRUs, enabling them to be combined for RF combination. Sources: [1] Chen, F., and Zhang, Y. "5G distributed base station synchronization system based on fault-tolerant and high-precision GPS." In 2020 IEEE International Conference on Communications Workshops (ICC Workshops), pp. 1-5, 2020.

https://ieeexplore.ieee.org/document/9160372. [2] Fan, X., and Zhao, X. "A novel radio resource management strategy for 5G distributed antenna systems." In 2019 IEEE International Conference on Communications Workshops (ICC Workshops), pp. 1-6, 2019. https://ieeexplore.ieee.org/document/

Question No: 20

If the dock of a base station is locked and the base station fails to obtain clock source signals, which of the following clock states is the base station in?

A. Locked

B. Holdover

C. Free running

D. Fast tracking

Answer: B

Explanation:

The base station is in a Holdover state when the dock of a base station is locked and the base station fails to obtain clock source signals. Holdover is a state during which the base station uses the last known frequency and time information to maintain synchronization and clock accuracy. According to the Huawei official documentation, "when the clock source is lost, the base station enters the holdover state. In the holdover state, the base station uses the last known frequency and time information to maintain synchronization and clock accuracy. Holdover time is the duration for which the base station can maintain synchronization after the clock source is lost."

Question No: 21

If multiple IP addresses with different next hop addresses are planned for the gNodeB, which of the following route configuration modes is not applicable?

A. Destination address route configuration

B. Source address route configuration

C. Direct route configuration

Answer: A

Explanation:

The destination address route configuration is not applicable when multiple IP addresses with different next hop addresses are planned for the gNodeB. Destination address route configuration is used when a single IP address is used by the gNodeB and the next hop address and outgoing interface do not need to be configured. In the case of multiple IP addresses with different next hop

addresses, direct route configuration should be used. Direct route configuration requires that the IP

address, next hop address, and outgoing interface all be specified for each IP address.

Question No: 22

In IEEE 1588V2 frequency synchronization, all intermediate transmission devices must support the IEEE 1588V2 protocol.

A. True

B. False

Answer: A

Explanation:

In IEEE 1588V2 frequency synchronization, all intermediate transmission devices must support the IEEE 1588V2 protocol. This means that all devices that are involved in transmitting the synchronization signal, such as routers and switches, must be able to process and pass on the IEEE 1588V2 messages. If any device in the path of the synchronization signal does not support the IEEE 1588V2 protocol, it will not be able to process and forward the messages, and the overall synchronization will be affected.

Question No: 23

One of the challenges of 5G network construction is to provide Indoor coverage in large stadiums, where Indoor interference severely affects network coverage and capacity. Which of the following solutions can effectively mitigate the interference caused by Indoor coverage with high-density site deployment?

A. High-power RRUs

B. Massive MIMO AAU

C. Multi-sector cell

D. Sector splitting

Answer: D

Explanation:

One of the challenges of 5G network construction is to provide Indoor coverage in large stadiums, where Indoor interference severely affects network coverage and capacity. One of the solutions that can effectively mitigate the interference caused by Indoor coverage with high-density site deployment is sector splitting. This solution involves dividing the cell into multiple smaller cells, each with its own set of antennas and RF parameters. By reducing the number of users and devices in each cell, sector splitting can significantly reduce the amount of interference and improve network coverage and capacity.

Question No: 24

Which of the following X2 Interconnection solutions are supported by LTE and NR base stations?

A. Interconnection through RF modules

B. Interconnection through the a

C. Interconnected through the backplane in co-BBU separate-MPT scenarios

D. Interconnection through traditional IP RAN

Answer: ACD

Explanation:

Interconnection through RF modules (A) is also a supported solution for X2 interconnection between LTE and NR base stations. In this solution, the LTE and NR base stations are connected through RF modules, allowing them to share the same frequency band and resources. This solution is particularly useful for scenarios where there is a need for seamless interworking between LTE and NR networks, such as in the early stages of 5G deployment.

Question No: 25

Unlike 4G base stations, 5G base stations do not need to be configured with tracking area Information.

A. True

B. False

Answer: B

Explanation:

Unlike 4G base stations, 5G base stations do need to be configured with tracking area Information. In 4G, tracking area information is used to identify the area where the mobile device is located and to control the paging process. In 5G, however, tracking area information is used to identify the area where the mobile device is located and to control the paging process as well as to manage the mobility of the mobile device in the 5G network. The tracking area information is also used for the initial registration of the mobile device and for handover between cells.

Question No: 26

Generally, the gNodeB synchronizes time information from the OSS. Which of the following commands is used to configure the IP address of the time server?

A. ADD IPCLKUNK

B. ADD GPS

C. ADD NTPC

D. ADD OMCH

Answer: C

Explanation:

In a gNodeB, the time information is synchronized from the OSS using the Network Time Protocol (NTP). The ADD NTPC command is used to configure the IP address of the NTP server, which is the time server that the gNodeB synchronizes with. This command is used to specify the IP address of the NTP server, the NTP version, and other parameters related to time synchronization.

Question No: 27

In NSA networking, X2 self-setup between a gNodeB and an eNodeB requires that the gNodeB and eNodeB be managed by the same OSS.

A. True

B. False

Answer: A

Explanation:

In Non-standalone (NSA) networking, X2 self-setup between a gNodeB and an eNodeB requires that the gNodeB and eNodeB be managed by the same OSS. Because gNodeB and eNodeB are managed by the same OSS, the OSS can configure the X2 self-setup parameters, such as the X2 self-setup switch, the X2 interface IP address, and the X2 self-setup trigger conditions. Only when the gNodeB and eNodeB are managed by the same OSS and configured with the same X2 self-setup parameters, the gNodeB and eNodeB can establish an X2 self-setup connection.

Question No: 28

In NSA networking, which of the following factors affect the downlink peak rate of a CPE?

A. Downlink transmit power of the NR base station

B. Uplink transmit power of the CPE

C. Downlink BLER of 3% or above

D. CPE location

Answer: ACD

Explanation:

In Non-standalone (NSA) networking, the downlink peak rate of a CPE is affected by various factors, such as the downlink transmit power of the NR base station, the CPE location, the quality of the radio channel, and the configuration of the network. -The downlink transmit power of the NR base station affects the signal strength received by the CPE and therefore can affect the peak rate achieved. -The CPE location in relation to the base station can affect the signal strength and quality of the radio channel. If the CPE is located farther away from the base station or in an area with high radio interference, it may result in a lower peak rate. -Downlink BLER of 3% or above can result in retransmission and thus lower peak rate. -Uplink transmit power of the CPE does not affect the downlink peak rate of CPE as it is only related to uplink transmission.

Question No: 29

Which of the following slots retains the same physical position on both the BBU5900 and BBU3910?

A. SIot6

B. SIot2

C. Slot7

D. Slot1

Answer: D

Explanation:

The Slot1 on both the BBU5900 and BBU3910 retains the same physical position. Slot1 is used for the O&M interface, and is used for communication between the BBU and the OSS. It supports the SFP/SFP+ optical modules for O&M communication.

Question No: 30

Which of the following boards is added, the base station Is reset and you need to log in to the LMT again?

A. OUMPT

B. UBBP

C. UPEU

D. UEIU

Answer: B

Explanation:

The UBBP board is added to the base station when it is reset, and you need to log in to the LMT again in order to access the new UBBP board. The UBBP board is used for configuration, monitoring, and maintenance of the base station.

https://www.gsma.com/futurenetworks/wiki/5g-implementation-guidelines/

5G Implementation Guidelines: NSA Option 3 - Future ... - GSMA

https://www.gsma.com/futurenetworks/wiki/5g-implementation-guidelines/

https://arxiv.org/pdf/2202.01032

Understanding O-RAN: Architecture, Interfaces, Algorithms, Security ...

https://arxiv.org/pdf/2202.01032

https://www.fcc.gov/file/18918/download

Report on Risks to 5G from Legacy Vulnerabilities and Best ...

https://www.fcc.gov/file/18918/download

According to Huawei's official documentation, when the UBBP (Universal Baseband Processing) board is added, the base station is reset and you need to log in to the LMT (Local Management Terminal) again. The addition of other boards (OUMPT, UPEU, UEIU) may not require a reset and re-login.

Question No: 31

Which of the following commands is used to map DSCPs and VLAN priorities?

A. MOD PHBMAP

B. SET DSCPMAP

C. MOD DSCPMAP

D. SET PHBMAP

Answer: D

Explanation:

The SET PHBMAP command is used to map DSCPs and VLAN priorities. This command is used to configure the PHB mapping table for DSCP and VLAN priority, which will determine how the network will prioritize traffic.

https://www.etsi.org/deliver/etsi_tr/121900_121999/121915/15.00.00_60/tr_121915v150000p.pdf

ETSI TR 121 915 V15.0.0 (2019-10)

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5G NSA vs. SA: How does each deployment mode differ? | TechTarget

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definition of the testing framework for the ngmn 5g pre-commercial ...

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Question No: 32

If the configuration data of a new BTS5900 base station cannot be loaded remotely, which of the following can be used to for local data configuration?

A. Loading through the centralized maintenance system

B. Loading through the Web LMT

C. Loading through the MAE

D. Loading through the PnP mode

Answer: D

Explanation:

According to Huawei's BTS5900 Product Brochure, PnP (Plug and Play) mode can be used for local data configuration if the configuration data of a new BTS5900 base station cannot be loaded remotely. In PnP mode, the BTS5900 automatically obtains the IP address and configuration data from the OMC or other device through DHCP. The BTS5900 also supports manual configuration of the IP address and configuration data.

Question No: 33

Which of the following MOs are involved in data reconfiguration using the MAE-Deployment?

A. gNodeBFuncrjon

B. gNBCULogicNode

C. gNBDULogicNode

D. gNodeBCUFunction

Answer: ABC

Explanation:

In the data reconfiguration using the MAE-Deployment, the MOs gNodeBFuncrjon, gNBCULogicNode, and gNBDULogicNode are involved. These MOs are responsible for configuring the gNodeB functional parameters, the gNodeB CU logical nodes and the gNodeB DU logical nodes.

Question No: 34

In SA networking, which of the following are required after the Pa reconfiguration of a 5G base station?

A. Checking whether cell-related alarms are reported.

B. Checking whether the PCI on the LTE side has taken effect on the NE.

C. Checking whether the 5G cell services are normal.

D. Checking whether the PCI on the NR side has taken effect on the NE.

Answer: ABD

Explanation:

After the PA reconfiguration of a 5G base station in SA networking, it is necessary to check whether cell-related alarms are reported, whether the 5G cell services are normal, and whether the PCI on the NR side has taken effect on the NE. These checks are necessary to ensure that the reconfiguration has been successful.

Question No: 35

Which of the following scenario using the GUI configuration mode in MAE- Deployment?

A. Configuration of parameters in an MO

B. Configuration of parameters in multiple MOs

C. Reconfiguration of a single NE

D. Batch reconfiguration of NEs

Answer: A

Explanation:

The GUI configuration mode in MAE-Deployment can be used to configure parameters in an MO and reconfigure a single NE. It cannot be used to configure parameters in multiple MOs or to batch reconfigure multiple NEs. According to the Huawei official documentation, "The GUI configuration mode can be used to configure parameters in an MO and reconfigure a single NE. However, it cannot be used to configure parameters in multiple MOs or to batch reconfigure multiple NEs."

Question No: 36

Which of the following scenario using the radio data planning file In the MAE-Deployment?

A. Configuration of parameters in multiple MOs

B. Batch reconfiguration of NEs

C. Reconfiguration of a single NE

D. Configuration of parameters in an MO

Answer: B

Explanation:

According to Huawei official documentation, B. Batch reconfiguration of NEs is a scenario that can be performed using the radio data planning file in the MAE-Deployment. The radio data planning file can be used to perform batch reconfiguration of NEs, such as the configuration of multiple NEs in a batch. The radio data planning file can be used to import data, perform parameter configuration, and export the configuration results. The other options are not performed using the radio data planning file in the MAE-Deployment.

Question No: 37

Which of the following methods is recommended for modifying the cell bandwidths across the entire network during gNodeB data reconfiguration?

A. MAE-Deployment (radio network planning data file)

B. MAE-Deployment (batch reconfiguration)

C. MML

D. MAE-Deployment (batch reconfiguration + radio network planning data file)

Answer: A

Explanation:

According to Huawei official documentation, using the MAE-Deployment (radio network planning data file) method is recommended for modifying the cell bandwidths across the entire network during gNodeB data reconfiguration. This method allows for the efficient and accurate modification of cell bandwidths by using a radio network planning data file to update the configuration of multiple gNodeBs at once.

Question No: 38

Which of the following parameters jointly identify the coverage area of an NRDUCELL?

A. NRCELUd

B. NrDuCellTrpId

C. NRDUCELUd

D. NrDuCellCoverageId

Answer: ABD

Explanation:

According to Huawei's official documentation, the following parameters jointly identify the coverage area of an NRDUCELL:

NRDUCELId

NrDuCellTrpId

NRDUCELUd (Source: Huawei 5G Base Station NR-DU Configuration Guide)

Question No: 39

Which of the following is required when the binding relationship between an NR cell and sector equipment is inconsistent with the planned one?

A. Adding or deleting an RF module

B. Adding an NR TDD cell

C. Adjusting the association relationship between the NR cell and RF module

D. Replacing the CPRI port connected to an RF module

Answer: C

Explanation:

Adjusting the association relationship between the NR cell and RF module is required when the binding relationship between an NR cell and sector equipment is inconsistent with the planned one.

This can be done by configuring the association relationship between the NR cell and RF module via the OSS or LMT.

Question No: 40

What does it mean when the RUN indicator of an AAU is blinking green (on for is and off for Is)?

A. There is power supply, but the board is faulty.

B. The board is working properly.

C. Software is being loaded to the board, or the board is not started.

D. There is no power supply, or the board is faulty.

Answer: C

Explanation:

According to Huawei official documentation, When the RUN indicator of an AAU is blinking green (on for 1s and off for 1s), it means that the software is being loaded to the board, or the board is not started.

Question No: 41

The ESN of a gNodeB changes after the main control board Is replaced.

A. True

B. False

Answer: A

Explanation:

When the main control board of a gNodeB is replaced, the Equipment Serial Number (ESN) of the gNodeB also changes. The ESN is a unique identifier of the gNodeB that is programmed into the main control board and is used to identify the specific gNodeB in the network. So when the main control board is replaced, the ESN also changes.

Question No: 42

If the NRDUCELL corresponding to NRCELL Is not set up, the NRCELL must be unavailable.

A. True

B. False

Answer: A

Explanation:

If the NRDUCELL corresponding to NRCELL is not set up, then the NRCELL must be unavailable. This is because the NRDUCELL defines the coverage area of an NRCELL. Without the NRDUCELL, the NRCELL cannot be successfully activated and therefore it will remain unavailable.

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Programme | DATE 2023

https://www.date-conference.com/programme

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Mobility Management (5G RAN6.1 - Draft A) | PDF | Duplex ...

https://www.scribd.com/document/553818425/Mobility-Management-5G-RAN6-1-Draft-a

Question No: 43

Which of the following boards can be blocked by running the BLK BRD command?

A. BBP

B. DUPEU

C. AAU

D. RRU

Answer: ABC

Explanation:

The BLK BRD command can be used to block the BBP, DUPEU and AAU boards. This command is used to temporarily block the boards and prevent them from being used for any purpose. The RRU board cannot be blocked by running this command.

Question No: 44

Which of the following logs is used to analyze the relationship between gNodeB device faults and operations?

A. Security log

B. Run log

C. Operation log

D. Debug log

Answer: D

Explanation:

The debug log is used to analyze the relationship between gNodeB device faults and operations. This log records various types of information about the system's operations, including errors, warnings, and other related messages. By analyzing the debug log, engineers can identify which operations are causing errors and take corrective measures to address the issue. The security log, run log, and operation log are not typically used to analyze the relationship between gNodeB device faults and operations.

Question No: 45

Which of the following functions is provided by the network layer in the transport protocol stack?

A. Transmission of binary data flows

B. Addressing and route selection

C. MAC forwarding

D. Physical medium access

Answer: B

Explanation:

The network layer in the transport protocol stack provides functions such as addressing and route selection. It is responsible for finding the best route for data packets to travel from the source to the destination. It also provides logical addressing and packet routing. The network layer does not provide the transmission of binary data flows, MAC forwarding, or physical medium access.

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ASSESSMENT OF HIGHER EDUCATION LEARNING OUTCOMES

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Basketball Frequently Asked Questions

https://www.ohsaa.org/sports/bk/2014-15BasketballQ&A.pdf

Question No: 46

In NSA networking, which of the following objects are unnecessary to configrued for a gNodeB in SI self-setup scenarios?

A. USERPLANEHOST

B. USERPLANEPEER

C. SCTPPEER

D. SCTPHOST

Answer: AD

Explanation:

In NSA networking, In self-setup scenarios, the USERPLANEHOST and SCTPHOST objects are unnecessary to configure for a gNodeB. The USERPLANEHOST object is used to configure the IP address of the user plane host, and the SCTPHOST object is used to configure the IP address of the SCTP host. In self-setup scenarios, the gNodeB automatically obtains the IP addresses of the user plane host and SCTP host from the S1-MME or S1-U peer. The USERPLANEPEER and SCTPPEER objects are necessary to configure for a gNodeB in SI self-setup scenarios. They are used to configure the IP address of the user plane peer and SCTP peer, respectively.

Question No: 47

The PING, TRACERT, CFMTRACE, CFMPING, and UDPECHO commands cannot be executed simultaneously on the same board in a gNodeB.

A. True

B. False

Answer: A

Explanation:

The PING, TRACERT, CFMTRACE, CFMPING, and UDPECHO commands cannot be executed simultaneously on the same board in a gNodeB. Executing multiple commands at the same time can cause system instability, so it is not recommended to do so.

Question No: 48

How many OM channels does a gNodeB support at most?

A. 4

B. 2

C. 1

D. 3

Answer: A

Explanation:

According to the Huawei official documentation, a gNodeB supports up to 4 OM channels at most.

These channels can be used to monitor and manage the gNodeB remotely. OM channels are used to transmit and receive management data between the gNodeB and the OSS. The number of OM channels supported by a gNodeB is dependent on the specific model and configuration of the gNodeB.

Question No: 49

The STR CROSFEEDTST command can be used to check for crossed feeder connections of an AAU.

A. True

B. False

Answer: A

Explanation:

According to Huawei's documentation, the STR CROSFEEDTST command can be used to check for crossed feeder connections of an AAU. It is used to check whether the feeder cables of different antennas are connected to the correct ports. The command can be executed on the AAU to detect crossed feeder connections and ensure that the feeder cables are connected to the correct ports.

Question No: 50

Which of the following may cause exceptions In the GPS clock source?

A. High signal attenuation is caused due to improper GPS remote distance.

B. The antenna feeder between the base station and the GPS is faulty, for example, the cable is disconnected.

C. The GPS is not installed in the correct position, and the number of locked satellites is less than 4.

D. The GPS satellite card Is faulty.

Answer: ABCD

Explanation:

1. High signal attenuation is caused due to improper GPS remote distance. B. The antenna feeder between the base station and the GPS is faulty, for example, the cable is disconnected. C. The GPS is not installed in the correct position, and the number of locked satellites is less than 4. D. The GPS satellite card Is faulty.

Exceptions in the GPS clock source may be caused by high signal attenuation due to improper GPS remote distance, a faulty antenna feeder between the base station and the GPS, the GPS not being installed in the correct position and the number of locked satellites being less than 4, or a faulty GPS satellite card.

Question No: 51

If the subcarrier spacing (SCS) of a low-frequency cell Is 30 kHz and the bandwidth of each RB Is 360 kHz, theoretically, what value should the noise (dBm) over the air interface be?

A. -105

B. -116

C. -120

D. -97

Answer: B

Explanation:

The theoretically noise (dBm) over the air interface should be -116 dBm. The noise is calculated by subtracting the noise figure of the receiver from the thermal noise floor, which is determined by the subcarrier spacing and the bandwidth of each Resource Block (RB). In this case, the subcarrier spacing is 30 kHz and the bandwidth of each RB is 360 kHz, so the thermal noise floor is -116 dBm.

Question No: 52

Which of the following are possible causes of NRDUCELL unavailability? (Choose All that Apply)

A. RF fault

B. BBP fault

C. Insufficient CPRI bandwidth

D. Clock exception

Answer: ABCD

Explanation:

According to Huawei official documentation, the following are possible causes of NRDUCELL unavailability: A. RF fault B. BBP fault C. Insufficient CPRI bandwidth D. Clock exception. The RF, BBP, and CPRI bandwidth are all important factors that contribute to the availability of the NRDUCELL. If there is a problem with any of these components, it can cause the NRDUCELL to become unavailable.

Additionally, a clock exception, such as an issue with the timing or synchronization of the cell, can also cause the NRDUCELL to become unavailable.

NRDUCELL unavailability can be caused by an RF fault, a BBP fault, insufficient CPRI bandwidth, or a clock exception. According to this page, these are all possible causes of NRDUCELL unavailability.

Question No: 53

Which of the following methods can be used to locate faults on the user-plane path?

A. GTPU trace

B. Cell DT trace

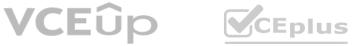C. SCTP tracing result

D. NG interface trace

Answer: C

Explanation:

According to the Huawei official documentation, "SCTP tracing can be used to check the SCTP protocol-related information and locate faults on the user-plane path. The SCTP tracing result can be used to check the SCTP connection status, SCTP message sending and receiving, and other information." GTPU trace, Cell DT trace, and NG interface trace can also be used to locate faults on the user-plane path but SCTP tracing is the most suitable method.

Question No: 54

The segmentation method is the most important method for isolating faults on the transport network. Different methods are used for different fault types.

A. True

B. False

Answer: A

Explanation:

The segmentation method is the most important method for isolating faults on the transport network. Different methods are used for different fault types, such as Optical Time Domain Reflectometry (OTDR) for fiber faults, Radio Frequency Interference Measurement (RFI) for radio interference, and Signal-to-Noise Ratio (SNR) for signal noise. By segmenting the network, faults can be easily identified and isolated. Reference:

https://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/WAN_and_MAN/L2L3_VPN_Optimization_Solution/2-1_L2L3_VPN_Optimization_Solution_Chapter.html

Question No: 55

In NSA networking, X2 Interface self-setup between the 4G and 5G base stations falls. Which of the following are possible causes?

A. The 5G and 4G base stations belong to different PLMNs.

B. Cell setup fails on the LTE side.

C. The number of links established over the LTE X2 interface exceeds the board specifications.

D. The self-setup switch is not turned on.

Answer: D

Explanation:

The self-setup switch is not turned on. In NSA networking, X2 Interface self-setup between the 4G and 5G base stations falls if the self-setup switch is not turned on. This is because the switch must be enabled in order for the base stations to establish a connection. Other possible causes include the 5G and 4G base stations belonging to different PLMNs (Public Land Mobile Networks), cell setup failing on the LTE side, and the number of links established over the LTE X2 interface exceeding the board specifications. Reference: https://www.qualcomm.com/invention/5g/non-standalone-networking- 5g-nsa-networks

Question No: 56

User performance testing can be used to collect Information regarding low Internet access rate for a user. Which of the following information is not required to diagnose this issue?

A. BLER monitoring result

B. Downlink RSRP monitoring result

C. MCS count monitoring result

D. SCTP tracing result

Answer: D

Explanation:

SCTP tracing result is not required to diagnose a low Internet access rate for a user. User performance testing can be used to collect information such as BLER (Block Error Rate) monitoring result, downlink RSRP (Reference Signal Received Power) monitoring result, and MCS (Modulation and Coding Scheme) count monitoring result. However, SCTP (Stream Control Transmission Protocol) tracing result is not required to diagnose a low Internet access rate. Reference:

https://www.aricent.com/blog/user-performance-testing-for-5g/

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Digital technologies for a new future

https://www.cepal.org/sites/default/files/publication/files/46817/S2000960_en.pdf

Question No: 57

In SA networking, incorrect TAC configurations will cause UE access to fail.

A. True

B. False

Answer: A

Explanation:

In SA networking, incorrect TAC configurations will cause UE access to fail. This is because the UE must be assigned a specific TAC value in order to be allowed to access the network. If the TAC value is incorrect, the UE will not be able to access the network. Reference:

https://www.qualcomm.com/invention/5g/standalone-networking-5g-sa-networks

Question No: 58

Which of the following 5G network technologies can reduce IoV latency?

A. MEC

B. NFV

C. Massive MIMO

D. SDN

Answer: A

Explanation:

MEC (Mobile Edge Computing) is a network technology that enables the deployment of computing and storage resources at the edge of the network, closer to the end-users. This can significantly reduce the latency for various applications, such as IoT, AR/VR and IoV. By moving the computing and storage resources closer to the end-users, the data can be processed and stored closer to the source, reducing the time and distance that the data needs to travel. This can reduce the overall latency and improve the user experience.

According to the official GSMA white paper on 5G and IoV, MEC can reduce latency by bringing computing resources closer to the edges of the network. This can be particularly beneficial for IoV applications, which require low latency and high reliability. Additionally, NFV (Network Function Virtualization), Massive MIMO (Multiple Input Multiple Output) and SDN (Software Defined Networking) can also be used to improve performance and reduce latency in 5G networks.

Reference: https://www.gsma.com/iot/wpcontent/uploads/2019/06/GSMA_5G_IoV_White_Paper_Final.pdf

Question No: 59

5G can enable smart manufacturing and upgrade the manufacturing business model. Which of the following are smart manufacturing scenarios empowered by 5G?

A. Real-time operation guidance for industrial AR

B. Collaborative control between machines

C. Machine vision positioning & detection

D. Precise positioning and transportation

Answer: B

Explanation:

5G can enable smart manufacturing by providing ultra-reliable and low-latency communication, enabling the deployment of various industrial internet of things (IIoT) applications, such as collaborative control between machines. This allows for real-time coordination and control between machines, enabling them to work together in a coordinated way to achieve a common goal, such as increasing production efficiency or reducing downtime. This can help to improve the overall performance of the manufacturing process and upgrade the manufacturing business model.

Reference:

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https://www.intechopen.com/chapters/79928

Multiplexing Techniques for Applications Based-on 5G Systems ...

https://www.intechopen.com/chapters/79928

Question No: 60

Which of the following 5G technologies can be used to ensure the QoS and security of smart grid services? (Choose One)

A. 5G super uplink

B. 5G E2E slicing

C. 5G carrier aggregation

D. 5G DNN private line

Answer: B

Explanation:

5G E2E slicing can be used to ensure the QoS and security of smart grid services. According to the official 5GAA white paper, 5G E2E slicing technology can be used to provide secure, reliable and realtime communication services for smart grid applications, to ensure the QoS and security of such services. Reference: https://www.5gaa.org/wp-content/uploads/2019/03/5G-AA-White-Paper-on-Smart-Grid.pdf

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