

HCNP - LTE RNP & RNO

Huawei H35-561

Version Demo

Total Demo Questions: 8

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Topic Break Down

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Topic 1, LTE Radio Network Planning	48
Topic 2, LTE Radio Network Optimization	32
Topic 3, Mix Questions	2
Total	82

QUESTION NO: 1

Which of the following are the functions of the RRC layer? (multiple choice)

- A. Switch control
- B. System message broadcast
- C. Wireless resource management
- D. Integrity protection

ANSWER: A B C

Explanation:

In LTE, the Radio Resource Control (RRC) protocol is the control-plane layer responsible for configuring and maintaining the UE's radio connection with the E-UTRAN. "System message broadcast" is an RRC function because RRC carries broadcast system information, including the master and system information blocks that allow a UE to obtain cell configuration information and access the cell correctly.

"Switch control" is correct when understood as mobility or handover control. RRC prepares, commands, and completes UE mobility procedures through RRC signalling, including measurement configuration, handover-related reconfiguration, and connection-management actions. "Wireless resource management" is also correct in the RRC-control context: RRC configures radio resources and radio bearers for an individual UE, including signalling radio bearers, data radio bearers, measurement rules, and dedicated physical-layer and MAC-layer parameters. These functions allow the network to allocate and adjust radio resources according to service and mobility requirements.

The LTE RRC protocol procedures and message definitions are specified in [3GPP TS 36.331](#). The broader LTE radio-interface architecture and RRC's role in control-plane radio-resource configuration are described in [3GPP TS 36.300](#).

QUESTION NO: 2

What are the types of switching according to the trigger reason? (multiple choice)

- A. Coverage-based handover
- B. Load-based handover
- C. Business-based handover
- D. Handover based on UE moving speed

ANSWER: A B C D

Explanation:

LTE handovers can be classified by the condition or operational purpose that triggers their initiation. **Coverage-based handover** is triggered when radio conditions indicate that a target cell can provide more suitable coverage. **Load-based handover** is used for mobility load balancing, moving users where this helps distribute radio-resource demand between cells. **Business-based handover**, also commonly called service-based handover, selects mobility actions according to service requirements, such as the capabilities or radio characteristics needed to maintain an appropriate user experience. **Handover based on UE moving speed** uses mobility-state information, allowing the network to apply mobility behavior suitable for high-, medium-, or low-mobility UEs. These trigger categories support both radio performance and efficient use of LTE network resources. LTE mobility control is standardized around network-controlled handover and measurement-event reporting, while vendor implementations provide configuration mechanisms for coverage, load, service, and mobility-state-based policies. See [3GPP TS 36.300](#) for the LTE/E-UTRAN overall mobility architecture and [3GPP TS 36.331](#) for LTE RRC measurement and mobility procedures.

QUESTION NO: 3

What are the logos of GUTI? (multiple choice)

- A. MCC
- B. MNC
- C. MMEI
- D. S-TMSI
- E. M-TMSI

ANSWER: A B C E

Explanation:

In LTE, the Globally Unique Temporary UE Identity (GUTI) is a temporary UE identity allocated by the MME and used to avoid exposing the permanent IMSI during common mobility-management procedures. Its standardized structure is PLMN identity + MME Identifier + M-TMSI. The PLMN identity is formed from the Mobile Country Code (MCC) and Mobile Network Code (MNC), so both MCC and MNC are GUTI components. The MME Identifier (MMEI) identifies the serving MME within the PLMN; operationally, it comprises an MME Group ID and an MME Code. The M-TMSI is the temporary mobile subscriber identity portion that, together with the PLMN and MME identification information, enables the network to identify the UE with the full GUTI. Therefore, MCC, MNC, MMEI, and M-TMSI are the requested GUTI identifiers. This identity format supports efficient tracking-area and service procedures while allowing the network to use a temporary, rather than permanent, subscriber identity over the radio interface. The formal GUTI composition is specified in 3GPP TS 23.003, "Numbering, addressing and identification": [3GPP TS 23.003 archive](#). LTE mobility-management use of GUTI is also described in [3GPP TS 24.301 archive](#).

QUESTION NO: 4

The resource block of the PUCCH channel is in the middle of the uplink frequency band.

- A. True
- B. False

ANSWER: B

Explanation:

False is correct because, in LTE uplink, Physical Uplink Control Channel resources are normally placed at the edges of the configured uplink system bandwidth rather than in its middle. This edge allocation keeps uplink control signalling—such as HARQ acknowledgements, channel-quality information, and scheduling requests—separate from the central bandwidth generally used for Physical Uplink Shared Channel transmissions. The edge placement also supports frequency diversity: PUCCH formats use slot-to-slot frequency hopping between resource regions at opposite band edges, helping control signalling remain reliable under frequency-selective fading. The exact physical-resource-block locations are derived from the cell's configured PUCCH resource parameters and uplink bandwidth, but the governing principle remains that PUCCH occupies edge resource blocks. This is why stating that the PUCCH resource block is in the middle of the uplink frequency band is inaccurate. The LTE physical-channel mapping and PUCCH resource allocation rules are specified in 3GPP TS 36.211, particularly the PUCCH clauses: [3GPP TS 36.211 archive](#). Huawei LTE radio-network planning and optimization follows these standardized LTE physical-layer channel-mapping rules; see Huawei's LTE documentation portal: [Huawei LTE documentation](#).

QUESTION NO: 5

Which of the following are functions of LTE RLC acknowledged mode (AM)? (multiple choice)

- A. ARQ retransmission

- B. Segmentation and reassembly
- C. In-sequence delivery
- D. HARQ process management

ANSWER: A B C

Explanation:

LTE RLC AM supports retransmission through the ARQ mechanism. The receiving RLC entity sends status information indicating successfully received or missing RLC PDUs, and the transmitting entity can retransmit missing data. RLC AM also performs segmentation and reassembly, allowing RLC SDUs and RLC PDUs to be processed according to the radio resources available for transmission.

In-sequence delivery to upper layers is another RLC AM function. RLC AM reorders received PDUs where necessary before delivery. HARQ process management is not an RLC function; it is performed by the MAC layer together with the physical layer. RLC functions are specified in [3GPP TS 36.322](#).

QUESTION NO: 6

How many configurations are there for R8 TDD special subframe configuration?

- A. 3
- B. 5
- C. 7
- D. 9

ANSWER: D

Explanation:

The correct answer is **9**. In LTE Release 8 TDD, a radio frame includes special subframes that provide the transition between downlink and uplink transmission. The special subframe is divided into three fields: DwPTS (Downlink Pilot Time Slot), GP (Guard Period), and UpPTS (Uplink Pilot Time Slot). The standardized combinations of these field lengths are identified by the special subframe configuration index.

For the normal cyclic-prefix case applicable to the Release 8 TDD configuration table, the defined indices run from 0 through 8. Since the numbering is inclusive, this yields nine available special-subframe configurations. Network planners select an index according to the needed downlink-to-uplink switching guard time and the desired sizes of the downlink and uplink pilot portions. This standardized indexing ensures that the eNodeB and UE interpret DwPTS, GP, and UpPTS durations consistently.

The technical definition and the special-subframe configuration table are specified in 3GPP TS 36.211, section 4.2. For the current specification record and downloadable releases, see [3GPP TS 36.211](#). Additional LTE TDD frame-structure context is available from [3GPP TS 36.201](#).

QUESTION NO: 7

How many random access preambles are available in one LTE cell at most?

- A. 32
- B. 48
- C. 64
- D. 128

ANSWER: C

Explanation:

64 is correct. LTE defines a set of 64 random access preambles for a cell. The eNodeB configures which preambles are available for contention-based random access and may reserve particular preambles for contention-free random access, such as handover-related random access.

A UE performing contention-based random access selects a preamble from the configured common set. Since more than one UE can select the same preamble, the procedure includes a contention-resolution phase. For contention-free random access, the eNodeB assigns a dedicated preamble to the UE, avoiding preamble collision with other UEs using the common set. See [3GPP TS 36.211](#) and [3GPP TS 36.321](#).

QUESTION NO: 8

How many types of TDD uplink and downlink subframe configurations are there?

- A. 3
- B. 5
- C. 7
- D. 9

ANSWER: C

Explanation:

7 is correct. LTE Time Division Duplex uses a common carrier frequency for both uplink and downlink, separating transmission directions in time rather than frequency. The LTE radio specification defines seven standardized uplink–downlink configurations, numbered 0 through 6. Each configuration specifies the arrangement of downlink, uplink, and special subframes within a 10 ms radio frame. This provides operators with standardized choices for matching the uplink/downlink resource split to expected traffic asymmetry, such as a greater need for downlink capacity in data-centric networks or more balanced capacity requirements.

The configurations are not simply arbitrary frame layouts: they are defined so that devices and network nodes can reliably determine which subframes are available for each transmission direction and can apply the required TDD timing relationships. Special subframes support the direction transition by containing downlink pilot time slot, guard period, and uplink pilot time slot fields. The seven configuration values and their associated subframe allocations are specified in the LTE physical-channel specification, 3GPP TS 36.211, section 4.2. The relevant normative specification is available from the [3GPP TS 36.211 specification archive](#); 3GPP also provides an overview of its [LTE technology specifications](#).