

CBCS SCHEME

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Eighth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Advanced Cellular Communication

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss the reasons for choosing OFDM in LTE. (10 Marks)
- b. Explain the principle of operation of adaptive modulation and coding with a neat block diagram. (06 Marks)
- c. Discuss the two classes of equalizers. (04 Marks)

OR

- 2 a. Write a neat block diagram of EPC architecture along with legacy radio access networks and discuss in brief. (10 Marks)
- b. Explain the steps in developing statistical channel models and discuss fading models in brief. (10 Marks)

Module-2

- 3 a. With a neat block diagram of OFDM communication system, explain the principle of operation. (10 Marks)
- b. Explaining the spatial multiplexing MIMO system and the key points of single user MIMO model. (10 Marks)

OR

- 4 a. Explain the working of OFDMA downlink transmitter with a neat block diagram. (10 Marks)
- b. Write the block diagram of Receive Diversity and explain the principle of operation. (10 Marks)

Module-3

- 5 a. Draw the frame structure Type 2 format and explain the various fields. (10 Marks)
- b. Write the structure of downlink resource grid and discuss the three parameters that characterize the resource grid structure. (10 Marks)

OR

- 6 a. Discuss the Radio Interface Protocol stack of LTE. (10 Marks)
- b. Explain the transport channels in LTE. (10 Marks)

Module-4

- 7 a. Write the block diagram of SC-FDMA baseband signal generation and explain. (10 Marks)
- b. Explain the types of Random Access Procedures in LTE in detail. (10 Marks)

OR

- 8 a. Discuss the function of HARQ feedback in Downlink and Up-link transmission. (10 Marks)
- b. Explain how uplink control information assists physical layer procedures. (06 Marks)
- c. Discuss the uplink reference signals in brief. (04 Marks)

Module-5

- 9 a. Discuss the main services and functions of PDCP sublayer for user plane and control plane. (10 Marks)
- b. With a neat flow diagram, explain mobility management over X₂ interface. (10 Marks)

OR

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- 10 a. Discuss the main services and functions of RLC and MAC layers. (10 Marks)
- b. With a neat flow diagram, explain the mobility management over S1 interface. (10 Marks)
