CBCS SCHEME

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17EC81

Eighth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Wireless Cellular and LTE 4G Broadband

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. List the advantages of OFDM leading to its selection for LTE and explain. **(10 Marks)**

b. Discuss the delay spread and coherence bandwidth with relevant expressions. **(10 Marks)**

OR

2 a. Explain the following in brief :
(i) Pathless and Shadowing.
(ii) Angular Spread and Coherence distance. **(10 Marks)**

b. Explain with a neat diagram adaptive modulation and coding. **(10 Marks)**

Module-2

3 a. With a neat block diagram, explain OFDM communication system. Also mention the need of timing and frequency synchronization. **(10 Marks)**

b. Explain SC-FDMA uplink transmitter with neat diagram. **(10 Marks)**

OR

4 a. Explain spatial diversity of multiple antenna techniques. **(10 Marks)**

b. Explain open-loop MIMO in spatial multiplexing. **(10 Marks)**

Module-3

5 a. Explain the LTE Radio interference protocols. **(10 Marks)**

b. Explain the transport channels in LTE. **(10 Marks)**

OR

6 a. Explain the hierarchical channel structure of LTE. **(10 Marks)**

b. Explain briefly layer mapping and precoding in modulation mapping. **(10 Marks)**

Module-4

7 a. Explain uplink control information. **(10 Marks)**

b. Explain the types of uplink reference signals. **(10 Marks)**

OR

8 a. Briefly explain the function of H-ARQ feedback in downlink and uplink transmission. **(10 Marks)**

b. Explain in brief types of Random Access procedure in LTE. **(10 Marks)**

Module-5

9 a. Explain the main services and functions of PDCP sublayer for the user plane. **(10 Marks)**

b. Explain RRC states and its functions. **(10 Marks)**

OR

10 a. Explain mobility management over the SI transfer. **(10 Marks)**

b. Explain three basic approaches to mitigate ICI in downlink. **(10 Marks)**

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