

CBCS SCHEME

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17EC81

Eighth Semester B.E. Degree Examination, June/July 2023 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. Explain key enabling technologies and features of LTE with advantage of OFDM. (10 Marks)
b. Explain Evolved packet core architecture with neat figure and goal of EPC. (10 Marks)

OR

- 2 a. What is frequency reuse? Explain the cellular concept with frequency reuse. (08 Marks)
b. Explain the LTE channel model for multipath propagation. (08 Marks)
c. Write short notes on Adaptive Modulation and coding (AMC). (04 Marks)

Module-2

- 3 a. What is OFDM? Explain circular convolution and DFT to remove the ISE within each OFDM.s (08 Marks)
b. Explain OFDM encoding and decoding in the frequency domain. (08 Marks)
c. Define :
i) Peak to average ratio (PAR)
ii) Cyclic prefix. (04 Marks)

OR

- 4 a. Explain Orthogonal Frequency Division Multiple Access (OFDMA) for downlink transmitter and downlink receiver. (10 Marks)
b. Explain the receive diversity of maximal ratio combining and transmit diversity of 2×1 space Frequency Block Coding (SFBC). (10 Marks)

Module-3

- 5 a. Briefly explain the end – to – end. Architecture of LTE with designed principles. (10 Marks)
b. Explain the time – frequency grid for OFDMA of the downlink. (10 Marks)

OR

- 6 a. What are the common aspects of channel coding? Explain the channel coding processing. (08 Marks)
b. Explain downlink shared channels DL – SCH uses the rate $\frac{1}{3}$ convolution turbo codes. (08 Marks)
c. Write short notes on synchronization signals. (04 Marks)

Module-4

- 7 a. Explain uplink shared channels with frequency hopping and multiantenna transmission techniques. (10 Marks)
b. Explain random access channels during initial uplink synchronization. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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OR

- 8 a. What is channel quality mediator? Explain CQI estimation. (10 Marks)
b. What is the purpose of scheduling? Explain scheduling and resource allocation. (10 Marks)

Module-5

- 9 a. Explain PDCP overview associated with control plane and user plane. (10 Marks)
b. Explain the mobility management within LTE system over S₁ interface with neat flow diagram. (10 Marks)

OR

- 10 a. Explain the PDU header formats of RLC PDU with block diagram. (10 Marks)
b. Explain inter-cell interference coordination downlink and uplink. (10 Marks)
