



CBCS SCHEME

17EC81

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022 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 the advantages of OFDM for LTE. (08 Marks)
b. Explain the following in brief:
(i) Angular spread and coherence distance
(ii) Nakagomi-m fading
(iii) Doppler spread and coherence time. (12 Marks)

OR

- 2 a. Write the block diagram of Evolved packet core architecture and discuss the new elements of EPC. (08 Marks)
b. Explain path loss Friis transmission formula. (04 Marks)
c. With a neat diagram, explain adaptive modulation and coding. (08 Marks)

Module-2

- 3 a. With a neat block diagram, explain OFDM. (08 Marks)
b. Compare OFDM-FDMA, OFDM-TDMA and OFDM-CDMA (06 Marks)
c. Explain receive diversity selection combining and maximal ratio combining. (06 Marks)

OR

- 4 a. Write the block diagram of OFDMA downlink transmitter and explain the principle of operation. (08 Marks)
b. Write a note on cyclic prefix in OFDM. (06 Marks)
c. Compare OFDM system and SC-FDE system. (06 Marks)

Module-3

- 5 a. Explain the logical channels in LTE. (07 Marks)
b. With necessary diagram, explain the frame structure type 1 for the FDD mode. (06 Marks)
c. Explain the seven different transmission modes for the data transmission on the PDSCH channel. (07 Marks)

OR

- 6 a. Explain the synchronization signals in LTE. (10 Marks)
b. Write the structure of downlink resource grid and explain the types of resource allocation. (10 Marks)

Module-4

- 7 a. With necessary block diagram, explain the SC-FDMA baseband signal generation. (10 Marks)
b. Explain the types of uplink reference signals. (10 Marks)

OR

- 8 a. Explain the types of frequency hopping supported by LTE on PUSCH channel. (10 Marks)
b. Explain the types of Random access procedures in LTE. (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.

Module-5

- 9 a. Explain the main services and functions of PDCP sublayer. (10 Marks)
b. Explain the data transfer model and the main services and functions of the RLC sublayer. (10 Marks)

OR

- 10 a. Explain RRC states and its functions. (10 Marks)
b. Explain the mobility management over X2 interface. (10 Marks)
