# CBCS SCHEME

15EC81

## Eighth Semester B.E. Degree Examination, June/July 2023
## Wireless Cellular and LTE 4G Broadband

Time: 3 hrs.

Max. Marks: 80

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 flat LTE SAE architecture. (08 Marks)

**OR**

2 a. Explain the following in brief : i) Pathloss and Shadowing  ii) Angular Spread and coherence distance  iii) Doppler spread and coherence time. (09 Marks)
  b. Explain with a neat diagram, adaptive modulation and coding. (07 Marks)

### Module-2

3 a. With the help of neat diagrams explain how the timing and frequency synchronization is performed by the receiver to demodulate an OFDM signal. (08 Marks)
  b. Write the block diagrams of receive diversity and explain the principle of operation. (08 Marks)

**OR**

4 a. Write the block diagram of OFDMA down link transmitter and explain the principle of operation. (08 Marks)
  b. Explain the spatial multiplexing MIMD system and the key points of single user MIMD system model. (08 Marks)

### Module-3

5 a. Discuss the radio interface protocol stock of LTE. (08 Marks)
  b. Write the structure of downlink resource grid and explain the types of resource allocation. (08 Marks)

**OR**

6 a. Write the Frame structure Type 2 and explain the various fields applicable to TDD mode. (08 Marks)
  b. Discuss the Broadcast channels and multicast channels. (08 Marks)

### Module-4

7 a. Explain in brief : i) Frequency hopping  ii) Multiantenna transmission. (08 Marks)
  b. Explain Non – Synchronized random access procedure. (08 Marks)

**OR**

8 a. Explain CQI feedback in brief. (08 Marks)
  b. Explain the cell search process in LTE. (08 Marks)

### Module-5

9 a. Explain the main services and functions of PDCP sub layer for the user plane. (08 Marks)
  b. Explain RRC states and its functions. (08 Marks)

**OR**

10 a. Explain mobility management over the S1 transfer. (08 Marks)
   b. Explain three basic approaches to mitigate ICI in downlink. (08 Marks)

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