



# CBCS SCHEME

15EC81

## Eighth Semester B.E. Degree Examination, June/July 2019 Wireless Cellular and LTE 4G Broadband

Time: 3 hrs.

Max. Marks: 80

Note: Answer 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. (09 Marks)  
(iii) Doppler spread and coherence time.  
b. Explain with a neat diagram, adaptive modulation and coding. (07 Marks)

### Module-2

- 3 a. With a neat block diagram, explain OFDM communication system. Also mention the need of timing and frequency synchronization. (09 Marks)  
b. Explain SC-FDMA uplink transmitter with a neat figure. (07 Marks)

OR

- 4 a. Explain spatial diversity of multiple antenna techniques. (08 Marks)  
b. Explain open-loop MIMO in spatial multiplexing. (08 Marks)

### Module-3

- 5 a. Explain the LTE Radio Interference protocols. (08 Marks)  
b. Explain the transport channels in LTE. (08 Marks)

OR

- 6 a. Explain the hierarchical channel structure of LTE. (08 Marks)  
b. Explain briefly layer mapping and precoding in modulation mapping. (08 Marks)

### Module-4

- 7 a. Explain uplink control information. (08 Marks)  
b. Explain the types of uplink reference signals. (08 Marks)

OR

- 8 a. Briefly explain the function of H-ARQ feedback in Downlink and Uplink transmission. (08 Marks)  
b. Explain in brief types of Random Access procedure in LTE. (08 Marks)

### Module-5

- 9 a. Explain the main services and functions of PDCP sublayer 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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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.