CBCS SCHEME

USN | | | | | | | | | | |

18EC81

Eighth Semester B.E. Degree Examination, June/July 2024
Wireless and Cellular Communication

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Explain path loss modal for free space propagation. **(06 Marks)**

b. Explain briefly three basic propagation mechanisms. **(06 Marks)**

c. If a transmitter produces 50 W of power, express the transmit power in units of (i) dBm (ii) dBW. If 50 W is applied to a unity gain antenna with a 900 MHz carrier frequency, find the received power in dBm at a free space distance of 100 m from the antenna what is P_r(10 km)? Assume unity gain for the receiver antenna? **(08 Marks)**

OR

2 a. Distinguish between delay spread and coherence bandwidth. **(06 Marks)**

b. Distinguish between Doppler spread and coherence time. **(06 Marks)**

c. Explain the analysis of cellular systems. **(08 Marks)**

Module-2

3 a. Describe GSM protocols and signaling model with a neat diagram. **(10 Marks)**

b. Explain the various logical channels used in GSM. **(10 Marks)**

OR

4 a. List out the ten operations in call set up in GSM system. Explain in detail authentication and ciphering mode operation. **(10 Marks)**

b. Explain the intra BSC hand over operation in GSM. **(10 Marks)**

Module-3

5 a. Explain frequency planning issues for intersystems in CDMA. **(08 Marks)**

b. Explain the network nodes found in CDMA 2000 wireless system. **(12 Marks)**

OR

6 a. Explain basic spectrum spreading operation in CDMA. **(10 Marks)**

b. Explain the generation of the pilot channel signal. **(10 Marks)**

Module-4

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

b. With a neat block diagram, explain LTE network architecture and describe briefly the new elements provided in it. **(10 Marks)**

OR

8 a. With the help of neat diagrams, explain how the timing and frequency synchronization is performed by the receiver to demodulate an OFDM signal. **(12 Marks)**

b. What is PAR problem? Explain the methods used for PAR reduction. **(08 Marks)**

Module-5

9 a. Explain basic design principles followed in LTE specifications. **(10 Marks)**

b. Explain downlink OFDMA radio resources. **(10 Marks)**

OR

10 a. Explain uplink SC-FDMA radio resources. **(10 Marks)**

b. Explain the layers of LTE radio interface protocol. **(10 Marks)**

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