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Eighth Semester B.E. Degree Examination, Jan./Feb. 2023 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 model for free space propagation with equations. (08 Marks)
b. Explain Doppler Spread and Coherence time. (06 Marks)
c. Find a Fraunhofer distance for an antenna with maximum dimension of 1 meter and operating frequency of 900 MHz. If antennas have unity gain, calculate path loss. (06 Marks)

OR

- 2 a. Explain two ray models of ground reflections with necessary equations. (08 Marks)
b. Explain cell splitting and cell sectoring. (06 Marks)
c. Explain static channel models. (06 Marks)

Module-2

- 3 a. Explain the various logical channels used in GSM. (08 Marks)
b. List out ten operations in a call set up in GSM system. Explain in detail authentication and Ciphering mode operations. (12 Marks)

OR

- 4 a. Describe GSM protocols and signaling model with neat diagram. (06 Marks)
b. Explain the TDMA heperframe structure with diagram in detail. (07 Marks)
c. Explain steps involved during Intra-BSC handover. (07 Marks)

Module-3

- 5 a. Explain the basic spectrum spreading operation. (07 Marks)
b. Explain the generation of CDMA paging channels. (06 Marks)
c. Explain network nodes found in CDMA2000 wireless system. (07 Marks)

OR

- 6 a. Explain with block diagram the generation of CDMA forward traffic control with power control for 14.4 kbps traffic. (12 Marks)
b. Explain typical components of cdmaOne network. (08 Marks)

Module-4

- 7 a. Explain the advantages of OFDM leading to its selection of LTE. (06 Marks)
b. Explain OFDM baseband and passband transmitter with block diagram. (07 Marks)
c. Compare OFDM and SCFDE. (07 Marks)

OR

- 8 a. Explain with block diagram, flat LTE SAE architecture. (06 Marks)
b. Explain peak to Average Power Ratio (PAR). (07 Marks)
c. Explain SC-FDE system description. (07 Marks)

Module-5

- 9 a. Explain SCFDMA uplink transmitter and receiver with neat block diagrams. (12 Marks)
b. Explain Hierarchical channel structure of LTE. (08 Marks)

OR

- 10 a. Explain OFDMA downlink and uplink transmitter with diagram. (12 Marks)
b. Explain frame structure used in LTE. (08 Marks)
