



Eighth Semester B.E. Degree Examination, Dec.2025/Jan.2026
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 with diagram's the concept of 3-sector and 6-sectors cells. (10 Marks)
- b. If a transmitter produces 50W 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 Pr (10 km)? (10 Marks)
 Assume unity gain for the receiver antenna.

OR

- 2 a. Explain the concept of Path loss and shadowing. (10 Marks)
- b. Assuming free space propagation, a receiver is located 10 km away from a 50 W transmitter. The carrier frequency is 900 MHz, antenna gain at transmitter end receiver is 1 and 2 respectively, calculate:
- i) Power received at the receiver
 - ii) The magnitude of the E-field at the Rx antenna
 - iii) The power flux density
 - iv) The rms voltage applied to the receiver input. The Rx antenna has 50 Ω impedance and is matched to the receiver. (10 Marks)

Module-2

- 3 a. Explain GSM traffic and control signal bursts. (10 Marks)
- b. Explain with diagram a GSM hyper frame. (10 Marks)

OR

- 4 a. Explain with diagram the GSM call setup using MSRN. (10 Marks)
- b. Explain with diagram Intra-BSC Handover. (10 Marks)

Module-3

- 5 a. Explain with diagram the initial CDMA (IS-95) reference architecture. (10 Marks)
- b. Explain with diagram the elements of the CDMA-2000 packet core network. (10 Marks)

OR

- 6 a. Explain with diagram the generation of the CDMA synchronization channel signal. (10 Marks)
- b. Explain with figure three types of soft CDMA handoff. (06 Marks)
- c. Explain with flow diagram CDMA mobile – originated call time line. (04 Marks)

Module-4

- 7 a. Explain the key-enabling technologies and features of LTE with OFDM selection. (10 Marks)
- b. Explain with diagram the evolved packet core architecture. (10 Marks)

OR

- 8 a. Explain the comparison between an OFDM system and SC-FDE system with diagram. (10 Marks)
- b. Explain how 3GPP evolution towards a flat LTE-SAE architecture with relative figures. (10 Marks)

Module-5

- 9 a. Explain with diagram the LTE end to end network architecture. (10 Marks)
- b. Explain with diagram the radio interface protocol architecture and SAPS between different layers. (10 Marks)

OR

- 10 a. Explain with diagram the frame structure Type 1. (10 Marks)
- b. Explain with diagram the structure of the uplink resource grid. (10 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.