

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3171608

Date:24-11-2025

Subject Name:Wireless Communication

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Explain the Evolution of Mobile Communication.	03
	(b) Design 802.11 architecture of an ad-hoc network.	04
	(c) Explain type of generation (3G, 4G and 5G) used in wireless system with its advantages and disadvantages.	07
Q.2	(a) Why we use hexagon shape in cell structure? Give the proper reason.	03
	(b) Define following terms: (1) Page, (2) Half-duplex systems, (3) Cluster (4) Transceiver	04
	(c) Discuss the fixed channel allocation, Channel borrowing and dynamic channel allocation techniques in cellular systems.	07
	OR	
	(c) Explain how we increase cluster size and cell capacity in cellular network.	07
Q.3	(a) Differentiate NLOS and LOS systems.	03
	(b) Explain handoff process and dwell time.	04
	(c) A spectrum of 33 MHz is allocated to a wireless FDD cellular system which uses two 25 kHz simplex channels to provide full duplex voice and control channels. Compute the number of channels available per cell if a system uses (i) 4-cell reuse (ii) 7-cell reuse and (iii) 12-cell reuse.	07
	OR	
Q.3	(a) Illustrate the concept of diffraction.	03
	(b) Briefly explain different types of propagation models.	04
	(c) List out various outdoor propagation models & explain any one in brief.	07
Q.4	(a) What is CSMA Protocols? Explain briefly.	03
	(b) Differentiate/ Compare TDMA, FDMA and CDMA	04
	(c) What is ZigBee? Explain in details ZigBee networks using suitable diagrams.	07
	OR	
Q.4	(a) Define: 1-persistent CSMA, non-persistent CSMA, p-persistent CSMA.	03
	(b) Illustrate TDMA scheme with necessary equations.	04
	(c) Explain FDMA and OFDM with example.	07
Q.5	(a) Explain the concept of RAKE receiver in CDMA.	03
	(b) Differentiate: CDMA technology and GSM technology.	04
	(c) Define GPRS. Explain it with its architecture.	07

OR

- Q.5**
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|------------|---|-----------|
| (a) | Define following terms:
(1) BSC, (2) MSC (3) VLR | 03 |
| (b) | Compare Wi-Fi and Wi-max technology. | 04 |
| (c) | Write Short note on Security issues and challenges in a Wireless network. | 07 |
