Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII EXAMINATION – WINTER 2025

Subject Code:3171004 Date:26-11-2025

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)**	Define: 1) Hand off, 2) Dwell Time, 3) RSSI.	**03**
	(b)	Explain the concept of Frequency Reuse.	**04**
	(c)	List and explain basic propagation mechanisms.	**07**
Q.2	**(a)**	Define: 1) Full Duplex Channel, 2) Base station, 3) Mobile Switching Center	**03**
	(b)	What is cell splitting? State advantage and disadvantage of cell splitting.	**04**
	(c)	Explain Two Ray Ground Reflection Model in detail.	**07**
		OR	
	(c)	Explain with necessary diagram effect of co-channel cell. Derive the expression for signal to interference considering only first tire of co channel cells.	**07**
Q.3	**(a)**	State the significance of hexagonal cell geometry in cellular service area.	**03**
	(b)	Analyze the concept of fading in a wireless channel. Enlist the factors responsible for small-scale fading.	**04**
	(c)	Describe the concept of Doppler effect with relevant mathematical Expressions.	**07**
		OR	
Q.3	**(a)**	Compare flat fading and frequency selective fading.	**03**
	(b)	Describe the concept of umbrella cell approach in mobile communication	**04**
	(c)	Discuss the fixed channel allocation, Channel borrowing and dynamic channel allocation techniques in cellular systems.	**07**
Q.4	**(a)**	Draw the Block diagram of GSM system architecture.	**03**
	(b)	Explain Microcell Zone concept with neat diagram.	**04**
	(c)	Explain working of Rake receiver with help of block diagram.	**07**
		OR	
Q.4	**(a)**	Draw the forward channel in IS-95 System.	**03**
	(b)	Explain in brief GPRS.	**04**
	(c)	What are multiple access techniques? Compare FDMA, TDMA and CDMA as multiple access technologies.	**07**

Q.5	**(a)**	Explain the process by which CDMA system resolves near far problem.	**03**
	(b)	Compare persistent and non-persistent CSMA.	**04**
	(c)	Define FDMA. Discuss any four features of FDMA. Explain nonlinear effects in FDMA.	**07**

OR

Q.5	**(a)**	Discuss the concept of spread spectrum.	**03**
	(b)	Compare Zigbee and Bluetooth.	**04**
	(c)	Enlist and explain in brief challenges and security issues in 5 G.	**07**

****