Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3171004 Date:05-01-2023

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 channel assignment strategies.	**03**
	(b)	Explain the upgrade path from 2G to 3G cellular networks.	**04**
	(c)	Define: (1) Cell Dragging (2) Hard Handoff (3) Dwell Time (4) Base Station (5) RSSI (6) Full duplex channel (7) Mobile Assisted Handoff	**07**
Q.2	**(a)**	Why hexagonal cell shape is preferred in cellular architecture?	**03**
	(b)	Explain the concept of Cell sectoring in detail with figure.	**04**
	(c)	Prove that for a regular hexagonal geometry, the frequency reuse ratio and cluster size are related by the relationship $Q = (3N)^{1/2}$, where $N= i^2 +j^2 +ij$.	**07**
		OR	
	(c)	Explain the concept of frequency reuse in cellular system.	**07**
Q.3	**(a)**	Explain the Space diversity briefly.	**03**
	(b)	Explain three basic propagation mechanisms.	**04**
	(c)	Describe the concept of Doppler effect with relevant mathematical Expressions.	**07**
		OR	
Q.3	**(a)**	Explain the Frequency diversity briefly	**03**
	(b)	Explain small scale fading based on time delay spread.	**04**
	(c)	Explain Two Ray Ground Reflection Model in detail.	**07**
Q.4	**(a)**	Explain the handoff process in IS-95 standard.	**03**
	(b)	Give the classification of GSM channels.	**04**
	(c)	Describe the Rake receiver in CDMA.	**07**
		OR	
Q.4	**(a)**	Discuss the concept of spread spectrum.	**03**
	(b)	Briefly explain GPRS.	**04**
	(c)	Draw GSM system architecture and explain its working principle in detail.	**07**
Q.5	**(a)**	Explain Wi-Fi in brief.	**03**
	(b)	What is a nonlinear effect in FDMA?	**04**
	(c)	Compare TDMA, FDMA and CDMA techniques	**07**
		OR	
Q.5	**(a)**	Explain WiMAX in brief.	**03**
	(b)	Explain: I-persistent CSMA, non-persistent CSMA, p-persistent CSMA	**04**
	(c)	Explain the working of UWB Radio in detail.	**07**

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