Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VIII EXAMINATION – SUMMER 2016

Subject Code:X81102 Date:12/05/2016

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.**

Q.1	**(a)**	Define following terms relevant to Wireless Communication System (1) Base station (2) Mobile switching center (3) Control channel (4) mobile station (5) Forward Channel (6) Reverse Channel (7) Subscriber	**07**
	(b)	Write short notes on Cellular Telephone System	**07**
Q.2	**(a)**	What do you mean by Frequency Reuse concept? Explain with diagram.	**07**
	(b)	Prove that for a hexagonal geometry, the co-channel reuse ratio is given by $\mathbf{Q} = \sqrt{3N}$ where $\mathbf{N = i^2 + ij + j^2}$. Hint: Use the cosine law and the hexagonal cell geometry.	**07**
		OR	
	(b)	Give detail on Handoff Strategies used in GSM.	**07**
Q.3	**(a)**	Improving Coverage & Capacity in Cellular System cell splitting is one important technique; Explain it.	**07**
	(b)	Define following terms used in trunking theory. (a) Set up time (b) Traffic Intensity (c) Grade of service (d) Blocked call (e) Request rate	**07**
		OR	
Q.3	**(a)**	A cellular service provider decides to use a digital TDMA scheme which can tolerate a signal-to-interference ratio of 15 dB in the worst case. Find the optimal value of N for (I) omnidirectional antennas, (II) 120° sectoring, and (III) 60° sectoring. Should sectoring be used? If so, which case (60° or 120°) should be used? (Assume a path loss exponent of n = 4 and consider trunking efficiency.)	**07**
	(b)	Explain GSM Architecture with various interfaces used in GSM.	**07**
Q.4	**(a)**	Where the Microcell Zone Concept is used? Explain this concept in detail.	**07**
	(b)	Give brief details on multiple Access Strategies like TDMA, CDMA, FDMA.	**07**
		OR	
Q.4	**(a)**	Write short notes on Free Space Propagation Model.	**07**
	(b)	Give details on Ground Reflection (Two Ray) Model.	**07**
Q.5	**(a)**	Explain the channels in GSM	**07**
	(b)	What do you mean by CDMA? Explain IS-95 system in detail.	**07**
		OR	
Q.5	**(a)**	Write short notes on Wireless Adhoc Network.	**07**
	(b)	Give details on CDMA-2000 cellular technology.	**07**

****