Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Subject Code: 183204 **Date: 27-05-2014**

Subject Name: Wireless and Mobile Communication

Time: 10.30 am - 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)**	Explain the concept of frequency reuse for cellular communication systems.	**07**
	(b)	Define following terms: (a) Control Channel (b) Forward Channel (c) Handoff (d) Reverse Channel (e) Half Duplex System (f) Paging System (g) Mobile switching center	**07**
Q.2	**(a)**	What is large scale propagation? Explain in detail the free space propagation model.	**07**
	(b)	For 7 Cell reuse regular cellular structure with equal size hexagonal cells, Determine the Signal-to-Interference (Co-channel) ratio for the system in dB, assuming path loss exponent n=4. For the same system, if, each cell is sectored in 120° sectors, what will be the improvement in Signal-to-interference ratio compared to non-sectored system, in dB? Also, determine adjacent channel interference for the same system.	**07**
		OR	
	(b)	If a total of 33 MHZ of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 KHZ simplex channels to provide full duplex voice and control channels , compute the number of channel available per cell if a system uses (a) four-cell reuse ,(b) seven-cell reuse, and (c) 12 - cell reuse. If 1MHZ of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each for each of the three systems.	**07**
Q.3	**(a)**	Give complete classification of types of Small Scale Fading.	**07**
	(b)	State the techniques to improve the capacity of cellular system and explain any two of them.	**07**
		OR	
Q.3	**(a)**	Briefly Describe Hand-off strategies in cellular system.	**07**
	(b)	Define the following terms: (a) Coherence Bandwidth (b) Coherence Time	**07**
Q.4	**(a)**	Briefly Describe the functions of the following for GSM Systems. i. MSC ii. VLR iii.HLR iv. AUC v. EIR.	**07**
	(b)	Explain GSM Speech Processing in Brief.	**07**
		OR	
Q.4	**(a)**	Explain the services provided by GSM.	**07**
	(b)	Explain the frame structure for GSM.	**07**
Q.5	**(a)**	Explain IS-95 CDMA operation.	**07**
	(b)	Compare TDMA, FDMA and CDMA Technology for cellular systems.	**07**
		OR	
Q.5	**(a)**	Explain in detail the wireless Ad-Hoc network with diagram.	**07**
	(b)	What is soft handoff? Explain in detail RAKE receiver with diagram.	**07**

****