Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– I (OLD course)• EXAMINATION – SUMMER 2015

Subject Code: 710206 **Date: 16/05/2015**

Subject Name: Wireless Computer Networks

Time: 10:30 am to 1:00 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 effect of path loss and Doppler on radio propagation on signals of wireless networks.	**07**
	(b)	Compare the Ad-hoc network and infrastructure wireless networks.	**07**
Q.2	**(a)**	Explain the following capacity expansion techniques along with necessary diagrams: (I) Using Directional Antennas for Cell Sectoring (II) Leeôs Microcell Method	**07**
	(b)	Write short note on Short Messaging Service in GSM.	**07**
		OR	
	(b)	Explain the system architecture of GSM along with its subsystems explain the roles of various entities in it.	**07**
Q.3	**(a)**	Derive a general formula for signal-to-interference in cellular topology. Convert that into a path loss model in dB form also. How is this relationship helpful in capacity calculations?	**07**
	(b)	How does TCP detect the packet loss? What is way of handling such situation?	**07**
		OR	
Q.3	**(a)**	The Modulation technique used in existing AMPS is analog FM. The transmission bandwidth is 30 kHz per channel and the maximum transmitted power from a mobile user is 3 W. The acceptable quality of the received SNR is 18 dB and the power of the background noise in the system is -120dBm. Assuming that the height of the base and mobile station antennas are h_b = 100 m and h_m = 3 m respectively and the frequency of operation is f= 900 MHZ. What is the maximum distance between the mobile station and the base station for an acceptable quality of communication? a). Assume free space propagation with transmitter and receiver antenna gains of 2. b). Use Hataôs equations for Okumuraôs model in a larger city. c) Use JTC model in residential areas and assume that the mobile unit is used inside a building.	**07**
	(b)	Explain Bluetooth and its overall architecture, protocol stack and physical connection.	**07**
Q.4	**(a)**	What you understand by Fixed, Dynamic and Hybrid Channel allocation schemes? Explain each case in detail.	**07**
	(b)	Explain the Two-Ray model for propagation of radio waves under mobile radio environments. State the relationship between Pt and Pr. Show these relations in decibels, showing also the fade margin.	**07**
		OR	
Q.4	**(a)**	Compare and contrast the different generations of wireless networks along with one example of each.	**07**

	(b)	Explain the wireless transmission on various parameters like signal propagation, modulation techniques and multiplexing mechanism.	**07**
Q.5	**(a)**	Explain mobility management in wireless networks	**07**
	(b)	Explain the following Access Methods for Wireless LANs: (I) CSMA CA as adopted by 802.11 (II) RTS/CTS supported by 802.11	**07**

OR

Q.5	**(a)**	Explain the followings: (I) Wireless Geo-location. **(II)** Wi-MAX	**07**
	(b)	Describe the radio propagation mechanisms.	**07**

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