Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Remedial Examination April 2010

Subject code:710206 Subject Name: Wireless Computer Networks

Date: 09 / 04 / 2010 **Time: 12.00 noon – 02.30 pm**

Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the following terms with respect to wireless networks: (i) Frequency Reuse (ii) Cochannel interference (iii) handoff (iv) SIM (v) Multipath fading (vi) WPAN	**06**
	(b)	What are the advantages of Spread Spectrum Transmission? Explain (i)Frequency hopping Spread Spectrum Technique and (ii)Direct Sequence Spread Spectrum Technique.	**06**
Q.2	**(a)**	Discuss CSMA/CA scheme with illustration for the operation of collision avoidances in the IEEE 802.11 standard. How hidden terminal problem degrades the performance of CSMA protocols?.	**06**
	(b)	Calculate the no of channels/cell and the system capacity for a cluster size of 7 in a cellular system which has 504 radio channels available for handling traffic. Assume the area of the cell is 7 Sq Km and the area of the entire system is 3530 Sq Km. If the cluster size is reduced to 4, what is the system capacity. Comment on this.	**06**
		OR	
	(b)	Compare the S/I ratio for a mobile radio for the followimg cases of cellular system with frequency reuse factor of 7 and a path loss exponent n=4: (i) Omni directional antenna with six cochannel cells in the first tier of interferers (ii) 120^0 and 60^0 Directional antennas for cell sectoring.	**06**
Q.3	**(a)**	What is frequency selective fading? Explain Frequency diversity Techniques adopted in wireless communication.	**06**
	(b)	Explain two ray model for mobile radio environments .Obtain the relationship for the total path loss Lp with and without fade margin term.	**06**
		OR	
Q.3	**(a)**	Discuss the power control mechanisms in cellular systems.	**06**
	(b)	What is the need for Ad hoc network? What are the features and applications of multihop network? Compare the attributes of Ad hoc network and infrastructure wireless network topologies	**06**
Q.4	**(a)**	Explain Code division multiple access technique. Make a detail comparison of this scheme with FDM and TDM schemes.	**06**
	(b)	Draw the block diagram of the reference architecture of GSM and explain the function of each subsystem.	**06**
		OR	
Q.4	**(a)**	How does IEEE 802.3 standard differ from IEEE 802.11 standard?. Explain the following for IEEE 802.11 standard : (i)Reference architecture for the infrastructure and ad hoc networks (ii) hand off procedure (iii) Security.	**06**
	(b)	Discuss location Management in a wireless network	**06**
Q.5	**(a)**	Describe GPRS system architecture, its location and handoff managements	**06**
	(b)	Explain the overall state diagram of the Bluetooth with basic search operation of paging algorithm and principles used during inquiry and paging processes.	**06**
		OR	
Q.5	**(a)**	With the aid of block diagrams, explain in detail the IS-95 CDMA forward channel and reverse channel and compare the two.	**06**
	(b)	Discuss the fixed channel allocation, Channel borrowing and dynamic channel allocation techniques in cellular systems.	**06**

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