Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1720101 **Date: 16-06-2014**

Subject Name: Wireless Networking and Mobile Computing

Time: 02:30 pm - 05:00 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)**	Draw frame format of DECT. Calculate ónetô data rate and ógrossô data rate of DECT system. List the services of Network layer in DECT.	**07**
	(b)	Consider two different cellular systems that share the following characteristics. The frequency bands are 890-910 MHz for uplink and 930-950 MHz for the downlink. A duplex circuit consists of one 30 kHz channel in each direction. The systems are distinguished by the reuse factor, which are 4 and 19 respectively. For these systems, find the number of simultaneous communications that can be supported by a single cell in each system.	**07**
Q.2	**(a)**	Draw neat ASK, PSK, FSK and MSK waveforms with respect to a single time reference for a data sequence: 00011110.	**07**
	(b)	Explain the following terms in one or two sentences with reference to GSM: HLR, AuC, EIR, MSC, BTS.	**07**
		OR	
	(b)	The received power at a distance of 100 km is 5 nanowatt for a communication link. Determine the received power at a distance 400 km for the same link in absolute value as well as in decibels. Assume free space propagation mechanism.	**07**
Q.3	**(a)**	A CDMA uses direct sequence spread spectrum. Two users A and B want to send data 1101 and 0101. The codes used by A and B are <1,-1,-1,1,-1,-1,1> and <1,1,-1,-1,1,1> respectively. Show the step by step process of spreading, transmission and recovery of these data sequences. Assume suitable data if necessary. Also, calculate processing gain for this system.	**07**
	(b)	Explain the following terms in one or two sentences with reference to GSM: HLR, AuC, EIR, MSC, BTS.	**07**
		OR	
Q.3	**(a)**	Explain the advantages and drawbacks of CDMA cellular systems.	**07**
	(b)	Provide the relevant calculations to arrive at gross data rate of one physical channel in GSM.	**07**
Q.4	**(a)**	Compare various aspects of SDM, TDM, FDM and CDM. Give your answer in a tabular form.	**07**
	(b)	Explain the mechanisms used for forwarding packets between home agent and care of address in the mobile network layer.	**07**
		OR	
Q.4	**(a)**	Describe hidden terminal problem and exposed terminal problem in wireless LANs. Suggest solutions to these problems.	**07**
	(b)	Explain routing related fundamental differences in wired networks and ad hoc wireless networks.	**07**
Q.5	**(a)**	Discuss the client initialization process using DHCP. List the problems related with use of DHCP. Also, suggest solutions to those problems.	**07**

	(b)	What are the drawbacks of I-TCP? How does snooping TCP overcome that drawback? In what way M-TCP is different from snooping TCP?	**07**
		OR	
Q.5	**(a)**	Discuss the details of components and interfaces in WAP.	**07**
	(b)	List and briefly explain all security threats in wireless networks.	**07**

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