GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 141601   **Date: 19-12-2013**

Subject Name: Data Communication and Networking

Time: 02:30 pm to 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)**	What is OSI model? Explain duties of different layers of OSI model in detail.	**07**
	(b)	Explain various network topologies with advantages and disadvantages.	**07**
Q.2	**(a)**	Write short note on pulse code modulation.	**07**
	(b)	Write short note on the following 1) Repeater 2) Throughput 3)Attenuation	**07**

OR

	(b)	List out different types of methods for digital-to-digital conversion. Explain all methods under polar scheme with example.	**07**
Q.3	**(a)**	(i) What are the differences between a port address, a logical address, and a physical address	**04**
		(ii) Differentiate cable modem and 56K modem	**03**
	(b)	What is Multiplexing? Explain Frequency Division Multiplexing and Time Division Multiplexing.	**07**

OR

Q.3	**(a)**	Explain the function of DTE and DCE with example. Explain Null Modem in detail with diagram.	**07**
	(b)	Explain Shannon Capacity and Nyquist Theorem with example.	**07**
Q.4	**(a)**	Explain various Error Detection Mechanism in data communication.	**07**
	(b)	Construct a systematic (7, 4) cyclic code using generator polynomial $g(x) = x^3 + x^2 + 1$. Consider a data vector d=1001.	**07**

OR

Q.4	**(a)**	Explain the following LANs: 1. Token ring 2. Ethernet	**07**
	(b)	Explain the following 1. FDDI 2. Routing devices	**07**
Q.5	**(a)**	Write short note on (a) Router and (b) Gateway	**07**
	(b)	List functions of Presentation Layer and explain any two.	**07**

OR

Q.5	**(a)**	Differentiate distance vector and link state routing algorithm.	**07**
	(b	Differentiate circuit switching and packet switching.	**07**

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