Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-IV Examination June- 2010

Subject code: 141601 Subject Name: Data Communication & Networking

Date: 17 / 06 /2010 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)** What is OSI model? Explain duties of different layers of OSI model in detail. **07**

(b) What is analog-to-analog conversion? Explain any two techniques for analog-to-analog conversion in detail. **07**

Q.2 **(a)** What is network topology? Explain different network topologies with example and compare them. **07**

(b) We need a three-stage space division switch with N=360. We use 40 crossbars at the first and third stages and 8 crossbars at the middle stage. (where N is number of input lines) **07**

a. Draw the configuration diagram.
b. Calculate the total number of cross points.
c. Find the possible numbers of simultaneous connections.
d. Find the possible number of simultaneous connections if we use one single crossbar.
e. Find the blocking factor, the ratio of the number of connections in c and in d.

OR

(b) What is switching? Explain datagram networks in detail. **07**

Q.3 **(a)** List different types of methods for line coding under polar scheme for digital-to-digital conversion. Also explain them with example. **07**

(b) Explain the following: **07**

1. Pulse code modulation 2. Frequency division multiplexing

OR

Q.3 **(a)** List different techniques for digital-to-analog conversion. Explain any two in detail. **07**

(b) What is transmission medium? Explain different types of guided and unguided transmission medium in detail. **07**

Q.4 **(a)** Write short note on the following: **07**

1. Modems 2. Transmission impairment

(b) Explain simple parity check code and checksum with example. **07**

OR

Q.4 **(a)** What is a cable TV network? Explain cable modem in detail. **07**

(b) Explain cyclic redundancy check with example. **07**

Q.5 **(a)** Explain the following LANs: **07**

1. Token ring 2. Ethernet

(b) Explain link state routing with example. **07**

OR

Q.5 **(a)** Explain distance vector routing with example. **07**

(b) What is a network connecting device? List and explain different types of connecting devices in detail. **07**

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