Q. P. Code: 38712

[3 Hours] **[Total marks: 80]**

N.B. (1) Question 1 is compulsory.

(2) Attempt any three from remaining five questions.

1. (a) What is QoS? Explain various queue management algorithms for QoS. **10**

(b) What are connecting devices? Explain connecting devices used in various layers. **10**

2. (a) Explain the concept of Network Address Translation. **10**

(b) What is Point to Point(PPP) stack? Elaborate PPP stack protocols. **10**

3. (a) What are the guided and unguided media? Explain twisted pair and coaxial cable. **10**

(b) An organization is granted a block of addresses starting with 14.24.74.0 /24. The organization needs to create subnets as follows: **10**

a) Two subnets, each with 64 addresses.
b) Two subnets, each with 32 addresses.
c) Three subnets, each with 16 addresses.
d) Four subnets, each with 4 addresses.

Design the outline of address distribution. How many addresses are still remaining after allocation?

4. (a) What is Congestion? Explain the congestion control in TCP in detail. **10**

(b) Differentiate between **10**

a) ISO-OSI reference model and TCP/IP internet model

b) Distance vector routing and Link state routing

5. (a) Explain the working of Multiprotocol Label Switching(MPLS). **10**

(b) Calculate the CRC for the following bit stream 11010011 using divisor 1011 and write codeword. **10**

Assume that bit 6 (counting from LSB) in the codeword is in error and show that detection algorithm detects the error.

6. Write short notes on any FOUR. **20**

a) Transmission Impairments
b) Spanning Tree Bridge
c) Simple Mail Transfer Protocol
d) Optimality Principle
e) Tunneling