

[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. **10**
The organization needs to create subnets as follows:
 - 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