

(3 Hours)

[Total Marks: 100]

- N. B.: (1) **All** questions are **compulsory**.
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt any two of the following:** 10
 - a. Write a note on TCP/IP protocol suite.
 - b. What is NAT? How can NAT help in address depletion?
 - c. What is the purpose of RIP?
 - d. Explain the concept of Silly Window Syndrome Problem.

2. **Attempt any three of the following:** 15
 - a. List the layers in OSI model. Explain any two of them in detail.
 - b. Write a short note on IPv4.
 - c. Explain the four levels of addresses are used in the TCP/IP protocols.
 - d. An address in a block is given as 180.8.17.9. Find the number of addresses in the block, the first address, and the last address.
 - e. List and explain the fields of IP datagram used for fragmentation.
 - f. Explain the Classfull Addressing in the IPv4.

3. **Attempt any three of the following:** 15
 - a. Write a short note on ARP.
 - b. Write a short note on Proxy ARP.
 - c. Explain the source quench and time exceeded in ICMP error reporting messages.
 - d. Write a short note on Distance Vector Routing.
 - e. Explain the different types of Links used in OSPF.
 - f. Explain the data transfer phase in Mobile IP.

4. **Attempt any three of the following:** 15
 - a. Explain UDP Packet Format
 - b. What are the types of TCP timers? Explain the purpose of each one.
 - c. Describe the Three Way handshake used for Connection Establishment in TCP.
 - d. Explain the Congestion Control in TCP.
 - e. Explain SCTP association establishment.
 - f. Explain the features of Stream Control Transmission Protocol.

5. Attempt **any three** of the following: 15
- a Explain the operation of Dynamic Host Configuration Protocol (DHCP).
 - b Write a short note on transition states of Dynamic Host Configuration Protocol (DHCP).
 - c Explain the Fully Qualified Domain Name (FQDN) and Partially Qualified Domain Name (PQDN) in Domain Name System.
 - d What are the types of TFTP messages? What is the purpose of each one?
 - e Explain different types of Connections in FTP?
 - f Explain various modes of Operations in TELNET?
6. Attempt **any three** of the following: 15
- a. Explain the architecture of World Wide Web (WWW)?
 - b. Write a note on cookies used with HTTP.
 - c. Write a note on Multipurpose Internet Mail Extensions (MIME).
 - d. Write a short note on Post Office Protocol version 3 (POP3) and Internet Mail Access Protocol, version 4 (IMAP4).
 - e. Explain the command in Simple Mail Transfer Protocol (SMTP)
 - f. Explain the role of MIB.
7. Attempt **any three** of the following: 15
- a. Write a TCP program to find whether number sent by client is even or odd.
 - b. Explain ServerSocket class with its methods and properties.
 - c. Explain the concept of socket with example.
 - d. Explain in detail constructors used to create DatagramPacket.
 - e. Write a UDP socket program to find the factorial of given number.
 - f. Write a TCP Programming in java to return the reverse of the number sent by client.
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