

(Time: 2 $\frac{1}{2}$ hours)

[Marks: 75]

Please check whether you have got the right question paper.

- 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** calculator is **allowed**.

1. **Attempt any two of the following:** **10**
 - a. What is fragmentation? Which fields changes over datagram during fragmentation in routing? Explain.
 - b. Explain Dual stack and tunneling in IPV6.
 - c. Explain the options in IPv4.
 - d. Compare IPV4 with IPV6.

2. **Attempt any two of the following:** **10**
 - a. What are the types of ICMP error messages? Explain.
 - b. Mobile IP communication can be inefficient. Why? What is its solution? Explain.
 - c. What is Address Resolution Protocol? What is its use? Explain the ARP request and reply messages.
 - d. What are the different RIP times? Explain the purpose of RIP timers.

3. **Attempt any two of the following:** **10**
 - a. What are the services of TCP? Explain.
 - b. What is the concept of 3-way handshaking in TCP Connection establishment? Explain.
 - c. Compare TCP with UDP.
 - d. Explain the components of UDP package.

4. **Attempt any two of the following:** **10**
 - a. Write a short note on DNS.
 - b. Explain SCTP association establishment and Termination.
 - c. Describe the DHCP client server operations in the different network.
 - d. What are the types of SCTP chunks? Explain the meaning of each.

5. **Attempt any two of the following:** **10**
 - a. Explain the term NVT along with its character set.
 - b. Explain the architecture of WWW.
 - c. List and explain the types of FTP commands.
 - d. Describe the HTTP messages.

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6. Attempt **any two** of the following:

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- a. Explain video compression in MPEG
- b. Write a short note on MIME.
- c. What are the flow characteristics of QOS? Explain.
- d. Explain the following protocols: POP, IMAP

7. Attempt **any three** of the following:

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- a. Describe an IPV4 datagram header format.
- b. What are the types of OSPF Links? Explain.
- c. Explain the purpose of each TCP timer.
- d. Explain the header format of SCTP.
- e. What are the types of modes in TELNET? Explain.
- f. Describe the leaky bucket technique of traffic shaping.