(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.

[TURN OVER]

6. Attempt *any two* of the following: **10**

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: **15**

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.
