Q.P. Code : **14901**

(3 Hours) [Total Marks :80

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** questions out of remaining questions.
(3) Make suitable assumptions whenever **necessary**.

1. (a) Why there is a need for layered designing for networking and communication? Compare the TCP/IP and OSI reference models. 10

1. (b) Explain the modes of propagating light along optical channels. What are the advantages over other guided media? 10

2. (a) Explain the need for DNS and describe the protocol functioning. 10

2. (b) Explain the different elements of transport protocols. 10

3. (a) Explain how TCP handles error control and flow control. 10

3. (b) Why is flow control needed? What are the mechanisms? Explain how the Go-Back-N and Selective Repeat ARQ differ from each other. 10

4. (a) Why there is a need for congestion control? What are the different mechanisms? Explain them. 10

4. (b) Explain CSMA Protocols. Explain how collisions are handled in CSMA/CD. 10

5. (a) Why there is a need for framing? 10
The following encoding is used in a data link protocol:
A: 01000111; B :11100011; FLAG : 01111110; ESC:11100000
Show the bit sequence transmitted (in binary) for the four character frame:
A B ESC FLAG
when each of the following framing methods are used:
    a. Character count
    b. Flag bytes and byte stuffing
    c. Starting and Ending flag bytes, with bit stuffing

5. (b) Compare the network layer protocols IPv4 and IPv6 10

6 Give Short notes on any **four** :— 20
    (a) SNMP
    (b) HTTP
    (c) BGP
    (d) Ethernet
    (e) Virtual LAN

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