Duration: 3hrs   **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
       (2) Attempt any three questions out of the remaining five.
       (3) All questions carry equal marks.
       (4) Assume suitable data, if required and state it clearly.

1   Attempt any FOUR   **[20]**

    a   Discuss guided media used in computer networking.

    b   Compare between distance vector routing and link state routing.

    c   Explain error control in computer network.

    d   Explain the persistent strategies of CSMA.

    e   Explain Domain name system.

2 a Explain the need for a layered protocol architecture in computer networks. **[10]**
       Elaborate on each layer of the OSI model.

    b Explain HDLC (High-Level Data Link Control) in data communication. Discuss **[10]**
       its key features, frame structure, and the roles of the different frame types in
       HDLC. Highlight its significance in network communication.

3 a An organization is granted the block 211.17.180.0/24. The administrator wants to **[10]**
       create 32 subnets.
           1) Find the subnet mask.
           2) Find the number of addresses in each subnet.
           3) Find the first and last address in subnet 1.
           4) Find the first and last addresses in subnet 32.

    b Explain fragmentation in Computer network also compare IPv4 with IPv6. **[10]**

4 a Compare the TCP header and the UDP header. List the fields in the TCP header **[10]**
       that are not part of the UDP header. Give a reason for each missing field.

    b Explain Go-Back-N ARQ and Selective Repeat ARQ **[10]**

5 a Explain classfull IP addresses. Justify why subnetting is required. **[10]**

    b What are the different components of an e-mail system? What are the features of **[10]**
       SMTP protocol.

6   Write Short Note on any four.   **[20]**
         a) Berkeley API
         b) Fast speed LAN
         c) LAN topologies
         d) Open loop congestion control
         e) Ethernet switch

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