(3) Assume any **suitable** data wherever **required** but justify the **same**.

1. Answer any **four** questions :—   20
    (a) Coaxial cable is much less susceptive to Interference and cross talk than twisted pair. Why ?
    (b) What are the conditions to be satisfied for a valid CRC generator polynomial ? List the steps involved it.
    (c) Define utlization efficiency of the line and obtain the expression for the same for sliding window flow control.
    (d) Explain the looping problem in bridge LAN. How to solve it ?
    (e) Distinguish between frame relay and ATM.

2. (a) Explain XDSL Technologies and its application with the help of block diagram. Explain   10
         in detal ADSL.
    (b) Two neighbouring nodes A and B use Go-Back N ARQ with a 3 bit sequence number.   10
         Assuming that A is transmitting and B is receiving. Show the window position and
         frame flow for the following sequence of events :—
         (i)   Initial Position. Before A sends any Frames window at A & B.
         (ii)   After A sends frames 0,1,2 and B acknowledge 0,1 and the ACK are received
                by A.
         (iii) A sends frames 3,4 and then receiver REJ 3 from B.
         (iv)   A sends frames 3,4,5,6. The acknowledgement RR7 send by B is lost and
                A does not receive it.
         How would A react ? Indicate in the frame flow diagram.

3. (a) Explain HDLC Protocol with respect to the following :—   10
         (i)   Data Transfer mode
         (ii)   Frame structure and type
    (b) Draw a Three-stage space - division switch for N = 20, N = 5 and K = 2 and estimate   10
         the no. of crosspoint required. If the above switch is to be made non-blocking, derive
         the expression for the condition to be satisfied, also calculate the minimum crosspoint
         required for non-blocking.

4. (a) Explain with the help of neat sketch the Frame format of frame relay also give the   10
         detail of following Protocol —
         (i)   FECN
         (ii)   BECN
         (iii) EA
         (iv)   DE
    (b) State and Explain the following :—   -   10
         (i)   Dijkstra's Routing Algorithm
         (ii)   Bellman—Ford Routing Algorithm

5. (a) Justify, Ethernet is connection oriented or connection less. What is the purpose of   10
         the IEEE 802 Committee ? Explain CSMA / CD and its use.
    (b) Distinguish between —
         (i)   Synchronous TDM with statisfied TDM   3
         (ii)   Inband signaling and out of band signaling   4
         (iii) TCP and UDP.   3

6. (a) Explain ATM adaptation Layer and ATM cell in detail.
    (b) Explain the following :—
         (i)   ISDN Channels and Archetecture   10
         (ii)   ISDN user Interfaces.   10

7. Write short notes on the following (any **four**) :—   20
    (a) Point to Point Protocol
    (b) FDDI
    (c) Signaling System Seven (SS7)
    (d) TCP / IP
    (e) Congestion Control and Quality of Service.