

(3 Hours)

[Total Marks : 100]

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** questions out of the remaining **six** questions.  
 (3) Assume any **suitable** data wherever **required** but justify the **same**.

1. Answer any **four** questions :- 20
  - (a) Does TCP provide connection oriented or connection less service ? Differentiate between TCP and UDP.
  - (b) What is TDM bus-switching ? Explain the working of the control unit of a TDM bus-switch with suitable diagram.
  - (c) Why packet switching preferred over circuit switching for data transmission ?
  - (d) How does fast Ethernet differ from 10 BASE - T ?
  - (e) Explain the ISDN channel structure for basic and primary services.
  
2. (a) What are transmission impairments ? Compare any two transmission media with reference to their physical structure/characteristics, applications and performance. 10  
 (b) Calculate link utilization efficiency if the bit rate is 19.2 kbps, frame size is 960 bits, propagation time is 0.06 second for - 10
  - (i) Window Size = 3
  - (ii) Window Size = 7
  - (iii) What is minimum window size for 100% link utilization ?
  
3. (a) Explain different type of ARQ techniques and compare their merits and demerits. 10  
 (b) What is the advantages of the common channel signaling in a circuit switched network ? Distinguish between the associated mode and non-associated mode of operation. 10
  
4. (a) Distinguish between :- 10
  - (i) Circuit switching, datagram and virtual circuit switching.
  - (ii) Distance vector and link state routing.
 (b) With a suitable sketch explain the connection phases in point to point protocol (PPP), also explain supported sets of protocols to make a PPP a powerful protocol. 10
  
5. (a) Explain the signaling structure supported by SS7. How a basic call setup in SS7 ? 10  
 (b) Sketch the frame format of frame relay and explain address field. How it provides congestion control and quality of service ? 10

6. (a) Create a system of 3 LANs with 4 bridges. The bridge ( $B_1$  to  $B_4$ ) connect the LANs as follows :- 10
- (i)  $B_1$  connects LAN 1 and LAN 2
  - (ii)  $B_1$  connects LAN 1 and LAN 3
  - (iii)  $B_3$  connects LAN 2 and LAN 3
  - (iv)  $B_4$  connects LAN 1, LAN 2 and LAN 3.
- (b) Explain LAN protocol architecture with IEEE 802 reference. Sketch the general MAC frame format and the LLC PDU structure. 10
7. (a) Draw block diagram of functional architecture of B-ISDN and explain B-ISDN Channels and Interface. 10
- (b) Write short notes on the following (any **two**) :- 10
- (i) XDSL
  - (ii) Dijkstra's Routing Algorithm
  - (iii) CSMA/CD.

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