

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.(2) Attempt any **four** questions out of remaining **six** questions.(3) **Figures** to the **right** indicate **full** marks.(4) Assume **suitable** data wherever **required**.

1. a) The HDLC frame below is sent from primary to secondary, answer the following question- 4
- 01111110 00001111 10001011 FCS 01111110
- ←
- [i] What is the address of the secondary?
 - [ii] What is the type of frame?
 - [iii] What is the sender sequence number (if present)
 - [iv] What is the acknowledgement number (if present)
 - [v] Does the frame carry user data? If yes what is the value of data?
 - [vi] Does the frame carry management data? If yes what is the value of data?
 - [vii] What is the purpose of the frame?
- b) What is the difference between Network layer delivery and transport layer delivery 4
- c) What is the difference between congestion control and flow control 4
- d) What is the difference between service point addressing, logical addressing and physical addressing? 4
- e) In sliding window flow control method, why the size of window is one less than the modulo range. 4
2. a) Explain the SONET multiplexing and SONET frame structure. 10
- b) What is the mechanism of sliding window flow control 10
3. a) Explain HDLC protocol with frame format? 14
- b) The codeword is received as $T = 1010\ 0011\ 0101\ 1110$. Check whether there are errors in the received code word if the divisor is 110101. 06
4. a) Explain CSMA/CD and its use what part of 802 project uses CSMA/CD 10
- b) Explain Repeater, Bridges, Router and Switches. 10
5. a) Explain IP header and explain each field. 10
- b) Explain Dijkstra's shortest path algorithm using graph. 10
6. a) Define Utilization or efficiency of the line and derive the expression for – Stop & wait flow control and sliding window flow control 10
- b) With the help of block diagram explain ATM protocol architecture. 10
7. Compare-
- a) IPv4 and IPv6 7
 - b) Circuit switching, datagram packet switching and virtual packet switching 7
 - c) OSI model and TCP/IP model 6