

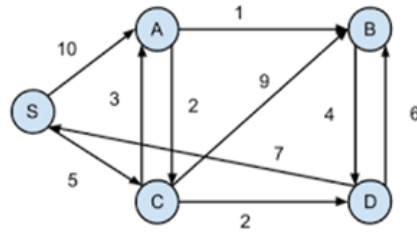
Duration: 3hrs

[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.

- Q1.** Attempt any FOUR [20]
- a Explain with example bit stuffing and byte stuffing in HDLC protocol. [05]
 - b Differentiate between IPv4 and IPv6. [05]
 - c Draw IPv4 header and explain its fields. [05]
 - d Differentiate between TCP and UDP protocol. [05]
 - e Explain Piggybacking in error control. [05]
- Q2.** a Explain CLOS non-blocking switching fabric with proper diagram. [10]
Sketch the three stage Space Division switch with $N=18$, group size of $n=6$, $k=2$.
What is the condition required to make it non-blocking?
- b Explain virtual circuit approach and datagram approach in packet switching. [10]
- Q3.** a Compare error control and flow control. [05]
Consider the use of 1000 bit frames on a 1 Mbps satellite channel with a 270ms delay. What is the maximum link utilization for [05]
- a. Stop-and-wait flow control?
 - b. Continuous flow control with a window size of 7?
 - c. Continuous flow control with a window size of 127?
 - d. Continuous flow control with a window size of 255?
- b Explain the need for the nonpersistent, 1-persistent and p-persistent CSMA and their working with neat diagrams. [10]
- Q4.** a Explain the classful addressing in IPv4. [05]
An address in a block is given as 194.146.24.50/25. Find the subnet mask, number of addresses in the block, the first address, and the last address in the block [05]

b



[10]

Find and draw the shortest route from source node 's' to all other nodes using Dijkstra's and Bellman-Ford algorithm

Q5. a Discuss simple ALOHA and slotted ALOHA protocols with proper diagrams. [10]

Compare their throughput.

b A is the primary station connected to the two secondary stations B and C in a half-duplex data transfer mode. Sketch the sequence of HDLC frames issued to implemented the data transfer for the following events: [10]

implemented the data transfer for the following events:

- i) A sends a command to set up the NRM mode to B and C stations.
- ii) The secondary stations B and C respond positively.
- iii) A selects station C for initiating data transfer.
- iv) C responds positively.
- v) A sends frames 0, 1, 2, 3 to C and C acknowledges all the frames except 3.
- vi) Station C sends positive acknowledgement for frame 3.

A sends a command to disconnect the data transfer mode and C acknowledges it properly.

Q6. a Explain domains and domain name space in DNS protocol. [10]

b Discuss the closed-loop congestion control mechanisms. [10]
