

ITS323 – Quiz 5

Name: _____

ID: _____

Mark: _____ (out of 10)

Question 1 [5 marks]

Consider the network in Figure 1. The data rate of each link is 1Mb/s. Table 1 gives the one-way propagation delay for each link (it is the same in both directions). Hosts (end-users) are squares and switches are circles.

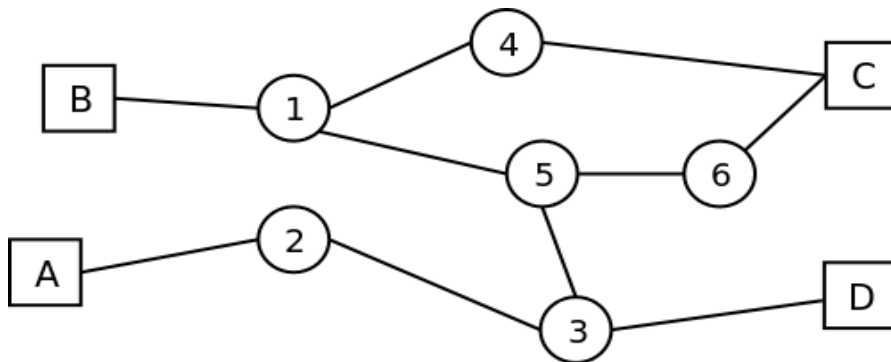


Figure 1: Switching Network: Squares are stations; Circles are Switches

Link	Propagation [ms]	Link	Propagation [ms]
B-1	10	6-C	15
1-4	2	A-2	1
1-5	3	2-3	5
4-C	3	3-5	2
5-6	1	3-D	4

Table 1: Link Properties

Assume Virtual Circuit Packet Switching is to be used on the path A-2-3-D. At time 0, the source host has 100,000 bits of data to send to the destination. Connection Request packets are 1,000 bits in length, as are Connection Response packets.

- a) How long does it take for the source host to fully receive the Connection Response? (Give your answer in milliseconds). [2 marks]

- b) If each packet can carry 10,000 bits of data (although there is a header, you can ignore its size in calculations), how long does it take for the destination host to fully receive the data? (Give your answer in milliseconds) [3 marks]

Question 2 [3 marks]

Explain two disadvantages of circuit switching (compared to datagram packet switching).

Question 3 [2 marks]

With a datagram packet switching network, assume hosts are sending at a total of 2Mb/s on average into the network. The network capacity is 2Mb/s. Explain *two* performance metrics that may change (and how they change), if the hosts send at a total of 3/1Mb/s.