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.

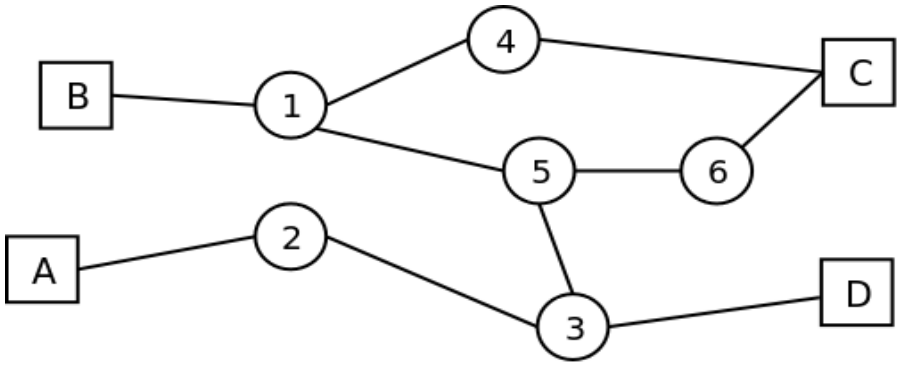

Figure 1: Switching Network: Squares are stations; Circles are Switches

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 1Mb/s.