CSc 4220/6220 – Practice Problems

Names: _____ _____

_____ _____

1. Computer A sends a 5000-bit packet to Computer B through a 5 Mbps link. Suppose the propagation speed is 2.5 x 108 meters/sec and the length of the link is 5 x 106 meters. When there is no network congestion, which of the following delays is largest:

   a. Propagation delay
   b. Nodal processing delay
   c. Transmission delay
   d. Queuing delay

① negligible

② negligible ③ So that leaves a & b as candidates

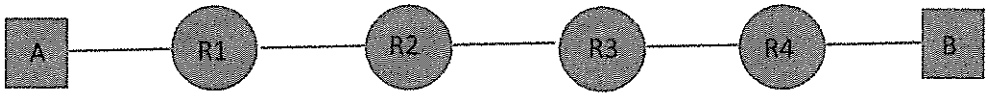
④ compute a & b then compare

⑤ Prop delay = d/s = 0.02 sec

Trans delay = L/R = 0.001 sec

Prop. delay is largest!

2. Calculate the latency (the time the first bit is sent by A to the time the last bit is received by B) to send one packet of L bits from A to B for the store and forward network shown below. Assume each link is R bps, d meters long, and has propagation speed s m/s.



① time for uploading packet from A
= trans delay = L/R

② time for last bit of packet to reach R1 = prop delay = d/s

③ steps 1 & 2 repeated for each hop/link

④ end to end latency
= $5(L/R + d/s)$