

# CS 6543 – Spring 2009

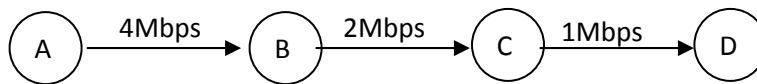
## HW-01 – Due Date: Feb 2, 2009, 7pm

!!! You must submit your answers using WebCT, no late HW will be accepted!!!

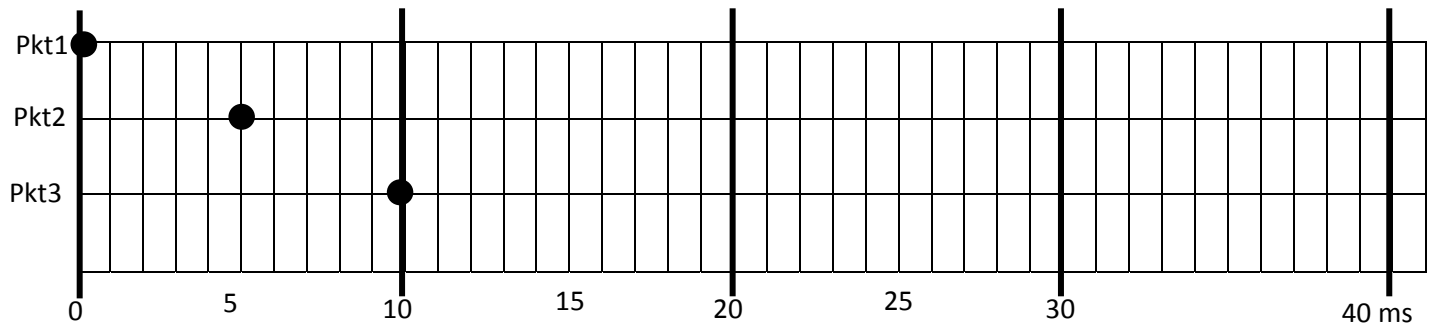
Total 70 points (for each question, you will get 10points)

Solve **P5, P7, P17, P18, P24, P26** (pg 70-75) from the textbook 4<sup>th</sup> edition and the following problem:

Consider the below network. Suppose Node A generates a 1-KB data packet every  $x$  msec and tries to send it to node D. Each link has the same propagation delay of **1msec**. The capacity (bandwidth) of A-B is 4 Mbps (mega bits per second), that of B-C is 2Mbps, and that of C-D is 1Mbps. Assume that packet processing time is zero at every node. Assume K(kilo) =  $10^3$ , and M (mega) =  $10^6$ .



- a) (6pt) Assume that  $x$  is 5msec (i.e., node A generates the first packet at  $t=0$ msec, the second one at 5msec, the third one at 10msec and so on). At what time will node D completely receive the first three packets? And what will be the queuing delay for each packet (Justify your answer using the following diagram.)



- b) (4pt) What should be the maximum size of data packets such that there will be NO queuing delay at any node? (Justify your answer. Here is another copy of the above diagram, you might want to use it, but it is not necessary.)

