CS 6543 – Summer 2017 HW-01 – Due Date: check BB Learn -Total 100 points.

You must submit your answers online using BB Learn. It will be great if you can type your answers. But it will also be OK to scan your handwritings.

!!! No late HW will be accepted!!!

Solve the following 8 problems (10 points for each) from the textbook 7th edition **P6, P8, P10, P13, P16, P21, P24, P31** in Ch1 (pg 70-78)

+ one additional question given in the next page (10 points)

+ complete the first WireShark Lab Intro (10 points)

Additional Question 1: 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=0msec, 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.)

