CS 372 Introduction to Computer Networks
Self-Check Exercises: Lecture 21

1) What is network congestion? What causes it?

2) What are some consequences of a congested network?

3) Given a nodal delay of 3 ms when there is no traffic on the network (i.e., when usage = 0%).
   a. What is the effective delay when network usage is 25%?
   b. What is the effective delay when network usage is 75%?
   c. What is the effective delay when network usage is 90%?
   d. What is the effective delay when network usage is 99%?
   e. What do these numbers illustrate about the given equation?

4) What is the goal of congestion control? What, in general, is used to do this?

5) A host starts a TCP transmission with an EstimatedRTT of 50ms (from the "handshake"). The host then sends 3 packets and records the RTT for each:
   SampleRTT1 = 30 ms SampleRTT2 = 40 ms SampleRTT3 = 20 ms
   (NOTE: SampleRTT1 is the "oldest"; SampleRTT3 is the most recent.)
   Using an exponential weighted moving average with a weight of 0.4 given to the most recent sample, what is the EstimatedRTT for packet #4 (nearest .1 ms)?

6) How is TCP’s timeout interval set?