CS5310.0001/0002, Fall 2009
Computer Networks and Communication Systems
Assignment 3

Issued: 11/04/2009
Due: 11/18/2009

1. ($15 \times 2 = 30$ pts) This problem is pertaining to the CSMA/CD protocol.

   (1) Assume that *three* machines have experienced two collision with respect to each other at the same time. What is the probability that one of the three will successfully acquire the channel without going through a third collision?

   (2) In class discussions it is pointed out that for the Ethernet protocol, the higher the data rate R, the lower the channel efficiency. Explain concisely why that is the case.

2. ($15 \times 2 = 30$ pts) Please concisely explain with your own words:

   (1) What is the so called "gap time" in the Ethernet protocol?

   (2) In the token ring protocol, why the token ring should have enough delay so that the entire token can be on the ring simultaneously?

3. (20 pts) Assume a PC in our department lab is configured with a default router with IP 147.26.100.1. Assume that an HTTP client application is trying to access an HTTP server in California. Explain in sequence all steps involved for such an HTTP communication session to be possible.

4. (20 pts) The program in Figure 3.10 of page 78 decides the byte order of a given computer by verifying the byte order of a short integer. Modify that program so that it will decide the byte order of a computer by checking the byte order of a 32-bit integer. Run your program on at least two Linux workstations to see their byte orders.

Please upload a copy of each programming problem solution through ftp (usename cs5310 and password is the same as class web page's) to

ftp://glaciers.cs.txstate.edu/pub/teaching/cs5310/f-09/hw3/Your-last-name