B38CN: Introduction Communications and Networks
Tutorial 5 (Chapter 4)

1. What is the difference between pure ALOHA and slotted ALOHA?

2. The CSMA/CD protocol is the basis of the popular Ethernet LAN. Explain how this protocol works.

3. A LAN uses Mok and Ward's version of binary countdown. At a certain instant, the ten stations have the virtual station numbers 8, 2, 4, 5, 1, 7, 3, 6, 9, and 0. The next three stations to send are 3, 4, and 9, in that order. What are the new virtual station numbers after all three have finished their transmissions?

4. Sixteen stations, numbered 1 through 16, are contending for the use of a shared channel by using the adaptive tree walk protocol. If all the stations whose addresses are prime numbers suddenly become ready at once, how many bit slots are needed to resolve the contention?

5. Sketch the Manchester encoding for the bit stream: 1010111000. Sketch the differential Manchester encoding for the above bit stream. Assume the line is initially in the low state.

6. In the following figure, four stations, *A*, *B*, *C*, and *D*, are shown. Which of the last two stations do you think is closer to *A* and why?