CS118 Homework 4 Due: 11:59pm May 20, 2014

1. (Cyclic Redundancy Check) Consider the 7-bit generator, $G = 10011$, and suppose that D has the value 1010101010. What is the value of R?

2. Consider the previous problem, but suppose that D has the value

   (a) 1001010101

   (b) 0101101010

   (c) 1010100000

3. Slotted ALOHA

   (a) Recall that when there are N active nodes, the efficiency of slotted ALOHA is $Np(1-p)^{N-1}$. Find the value of p that maximizes this expression.

   (b) Using the value of p found in (a), find the efficiency of slotted ALOHA by letting N approach infinity.

4. Suppose nodes A and B are on the same 10Mbps broadcast channel, and the propagation delay between the two nodes is 325 bit times. Suppose CSMA/CD and Ethernet packets are used for this broadcast channel. Suppose node A begins transmitting a frame and, before it finishes, node B begins transmitting a frame. Can A finish transmitting before it detects that B has transmitted? Why or why not?