ECE 6960: Adv. Random Processes & Applications
Homework 8, Fall 2010

1. Looking at the sequence of spam and legitimate email arriving at your inbox, you notice that 1 out of every 3 spam emails are followed by a legitimate email, while 3 out of 4 legitimate emails are followed by a spam email.

   (a) Draw a transition diagram for a M.C. which represents the random email process.

   (b) What fraction of emails are spam? Answer by finding a solution to the set of equations $\boldsymbol{\pi}^T = \boldsymbol{\pi}^T P(1)$ (*i.e.*, don't use Matlab to find the solution).

2. Leon-Garcia 11.3

3. Leon-Garcia 11.14. Note of explanation: The particle is selected randomly (uniformly) from all particles in either container. Whatever box this randomly selected particle was in, we move it to the opposite container.

4. Leon-Garcia 11.28 (a,b). Also list each class and its members.

5. Leon-Garcia 11.31