Statistics 511, Worksheet 4

Name (please print) :_____

1. An electronics store has received a shipment of 20 table radios with connections for external devices. Twelve of them have two connection slots, and the other eight have a single slot. Suppose that six of the 20 radios are randomly selected to be stored under a shelf where the radios are displayed.

   a) How many possible choices are there that two radios stored under the display shelf have two slots (hence the other four have one slot)?

   b) Calculate the probability of the previous event that two radios stored under the display shelf have two slots.

   c) Let X be the random variable as the number among the six radios stored under the display shelf that have two slots. Write down all possible values that X can be.

2. The prevalence of HIV in a population is 2%. A certain test for HIV has sensitivity 99.7% and specificity 98.5%. This means that if a person is HIV+, the probability is 0.997 that they will test positive. And if a person is HIV–, the probability is 0.985 that they will test negative.

   a) What is the probability that a person chosen at random from the population will test positive?

   b) If a person tests positive, what is the probability that they are really HIV+?