Your Name:

Duration of the Quiz is 25 minutes. There are four problems, worth 20 points. Show all your work for full credit. Books, notes etc. are prohibited.

1. Given that $P(A \cap B^c) = 0.3$, $P((A \cup B)^c) = 0.2$, and $P(A \cap B) = 0.1$, find $P(A|B)$.

2. Suppose two dice are rolled. Assume that each possible outcome has probability $1/36$. Let A be the event that the sum of the two dice is greater than or equal to 8, and let B be the event that at least one of the dice shows a 5. Find $P(A|B)$.

3. An urn contains six white chips, four black chips, and five red chips. Five chips are drawn out, one at a time and without replacement. What is the probability of getting the sequence (black, black, red, white, white)?

4. Suppose that two defective refrigerators have been included in a shipment of six refrigerators. The buyer begins to test the six refrigerators one at a time.

   (a) What is the probability that the last defective refrigerator is found on the fourth test?

   (b) What is the probability that no more than four refrigerators need to be tested to locate both of the defective refrigerators?

   (c) When given that exactly one of the two defective refrigerators has been located in the first two tests, what is the probability that the remaining defective refrigerator is found in the third or fourth test?