I.  A five character code word will be formed from the 26 letters of the alphabet and the digits 0, 1, 2, …, 9.

(a)  If repetition of letters and digits is permissible, then how many code words can be formed?  (2 points)

(b)  If the first 3 places of the code word will come from the alphabet and the remaining 2 places from the digits, how many code words can now be formed?  (Note: we are still allowing for repetition).   (3 points)

(c)  Assume the code words are configured as in part (b) above but now suppose that repetition of the alphabet letters and the digits is not permitted.  How many code words can be formed?  (3 points)

II.  A fair six-sided die is rolled 3 times.  The face value of each roll is recorded in an ordered triplet (i.e. (1,3,3) is a sample outcome).  What is the probability that the three rolls will result in different face values on the die?  (4 points)

III.  Two cards are drawn from a standard 52-card deck.  What is the probability the draw will result in an ace and a face card (Jack, Queen, or King)?  (4 points)

IV.  A fair coin is flipped 8 times and the outcome is recorded (a sample outcome is HHTTHHTH).  What is the probability that the 8 flips will result in exactly two heads?  (4 points)