Assignment 2

1. Derive first four moments (both central and non central) of exponential distribution using moment generating function. [1]

2. Derive first four moments (both central and non central) of exponential distribution and geometric distribution using moment generating function. [1]

3. A company makes electric motors. The probability an electric motor is defective is 0.01. What is the probability that a sample of 300 electric motors will contain exactly 5 defective motors? Solve by using both binomial and poisson distribution and compare the solutions. [1]

4. Suppose a fair coin is flipped 100 times. Find a bound on the probability that the number of times the coin lands on heads is at least 60 or at most 40. [1]

5. The average number of acres burned by forest and range fires in a large New Mexico county is 4,300 acres per year, with a standard deviation of 750 acres. The distribution of the number of acres burned is normal. What is the probability that between 2,500 and 4,200 acres will be burned in any given year? [1]