**Assignment 4: Probability distribution problems using R software.**

Q1).Let X→B(12,0.4)

**FIND** .P(X<=3), P(X>=8), P(4<=X<=6),P(X=6)

Q2). Let X→B(n , p) such that E(X)=4 , V(X)=8/3 find P[X<=4] , P[X>=3] .Also Draw a random sample of size 5 from given binomial distribution.

Q3).A machine produces screws of which 1% are defective, find the probability that in a box of 200 screws there are at least 2 defectives. Hint:(Using Poisson distribution).

Q4).Let X →B(n=8, p=0.3) .Find k such that P[X<=k]=0.2552

Q5).Draw a random sample of size 8 from Poisson distribution with mean 2.5.

Q6).If the probability that individual suffers from a bad reaction from injection of serum is 0.001,determine the probability that out of 2000 individuals injected 2 or more will suffer from a bad reaction.

Q7). In a certain industrial facility, accidents occur infrequently. It is known that the probability of an accident on any given day is 0.005 and accidents are independent of each other.

(a) What is the probability that in any given period of 400 days there will be an accident on one day?

(b) What is the probability that there are at most three days with an accident?

Q8). A pair of dice is rolled 420 times. What is the probability that a total of 8 occurs atleast 50 times? Between 70 and 90 times inclusive? Exactly 100 times?

Hint:(Using Poisson distribution).

Q9). The probability that a patient recovers from a rare disease is 0.4. If 100 people are known to have contracted this disease, what is probability that fewer than 30 survive?

Q10).Let X→N(µ=20,ϭ=2) Find P[X<=2] ,P[X<4] , P[X>7] and P[X=3]

Q11).Let X→Exp(ƛ) with mean =0.1 ,then find P[X<=1] also generate a random sample of size 5.