Practical 1. Discrete Probability Distribution

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Practical topic : Discrete Probability Distribution

Binomial Distribution

Q1. If X is Binomial Distribution B(n,p) where n=11 p=0.62

Write R-program to evaluate and print (i) P(X=3) (ii) P(X≤7) (iii) P(X≥6)

A)

CODE

a=dbinom(3,11,0.62)

b=pbinom(7,11,0.62)

c=1-pbinom(5,11,0.62)

cat("P(X=3)=",a)

cat("P(X≤7)=",b)

cat("P(X≥6)=",c)

OUTPUT

**> a=dbinom(3,11,0.62)  
> b=pbinom(7,11,0.62)  
> c=1-pbinom(5,11,0.62)  
> cat("P(X=3)=",a)  
P(X=3)= 0.01709731>  
> cat("P(X≤7)=",b)  
P(X=7)= 0.6545196>  
> cat("P(X≥6)=",c)  
P(X=6)= 0.7957275**

**Poisson Distribution**

**Q.2** 1. If X is Poisson Distribution mean 3%

Write R-program to evaluate and print (i) P(X=2) (ii) P(X≤3) (iii) P(2≤X≤4)

Code

m=3/100

a=dpois(2,m)

b=ppois(3,m)

c=ppois(4,m)-ppois(1,m)

cat("P(X=2)=",a)

cat("P(X≤3)=",b)

cat("P(2≤X≤4)=",c)

output

**m=3/100  
> a=dpois(2,m)  
> b=ppois(3,m)  
> c=ppois(4,m)-ppois(1,m)  
> cat("P(X=2)=",a)  
P(X=2)= 0.0004367005>  
> cat("P(X≤3)=",b)  
P(X=3)= 1>  
> cat("P(2≤X≤4)=",c)  
P(2=X=4)= 0.0004411002**

**Q3 Write R-program to fit Poisson Distribution for following data**

**R.V. X:0,1,2,3,4**

**Freq=** **211,90,19,5,0**

Code

x=0:4;f=c(211,90,19,5,0)

m=sum(f\*x)/sum(f)

px=dpois(x,m)

px1=round(px,5)

ef=sum(f)\*px1

ef1=round(ef,0)

d=data.frame(x,f,px,px1,ef,"exp freq"=ef1)

print(d)

output

**x=0:4;f=c(211,90,19,5,0)  
> m=sum(f\*x)/sum(f)  
> px=dpois(x,m)  
> px1=round(px,5)  
> ef=sum(f)\*px1  
> ef1=round(ef,0)  
> d=data.frame(x,f,px,px1,ef,"exp freq"=ef1)  
> print(d)  
x f px px1 ef exp.freq  
1 0 211 0.644036421 0.64404 209.31300 209  
2 1 90 0.283376025 0.28338 92.09850 92  
3 2 19 0.062342726 0.06234 20.26050 20  
4 3 5 0.009143600 0.00914 2.97050 3  
5 4 0 0.001005796 0.00101 0.32825 0**