

Poisson Distribution

Question 1- If the variance of the Poisson distribution is 2, find the probability for $r=1, 2, 3, 4$ from the recurrence relation of the Poisson distribution. Also find $P(X \geq 4)$.

Question 2- Assume that the probability of an individual coalminer being killed in a mine accident during a year is $\frac{1}{2400}$. Use Poisson distribution to calculate the probability that in a mine employing 200 miners there will be at least one fatal accident in a year.

Question 3- Suppose the number of telephone calls on an operator received from 9:00 to 9:05 follow a Poisson distribution with mean 3. Find the probability that

(i) The operator will receive no calls in that time interval tomorrow.

(ii) In the next three days, the operator will receive a total of 1 call in that time interval.

Question 4- If X is a Poisson variate such that $P(X=2) = 9 P(X=4) + 90 P(X=6)$, find the standard deviation.

Question 5- Suppose that X has a Poisson distribution. If $P(X=2) = \frac{2}{3} P(X=1)$ find

(i) $P(X=0)$ (ii) $P(X=3)$

Question 6- Records show that the probability is 0.00002 that a car will have a flat tyre while driving over a certain bridge. Use Poisson distribution to find the probability that among 20000 cars driven over the bridge, not more than one will have a flat ~~tyre~~ tyre.

Question 7- The incidence of occupational disease in an industry is such that the workmen have a 10% chance of suffering from it. What is the probability that in a group of 7, five or more will suffer from it?