Q1

A large no of crane shafts. 25% are defective. If 6 shafts are taken randomly. Find

(i) 3 of them are defective

(ii) At least 4 are defective

(iii) At most one is defective

Solution

(a) $n = 6$

$x = 3$

$P(x=3) = ?$

Solution $p = \frac{25}{100} = 0.25$ $\quad q = 1 - 0.25 = 0.75$

$$P(x=3) = \binom{6}{3} (0.75)^{6-3} (0.25)^3$$

$$= \frac{6!}{3!(6-3)!} \times (0.75)^3 (0.25)^3$$

$$= \frac{6!}{3! \cdot 3!} \times (0.75)^3 (0.25)^3$$

$$= \frac{6 \times 5 \times 4 \times 3!}{3 \times 2 \times 1 \times 3!} \times 0.421 \times 0.015625$$

$$= 20 \times 0.421 \times 0.015625$$

$$= 0.13156 \text{ Ans}$$

(ii) $P(\text{at least 4 defective}) = P(x=4) + P(x=5) + P(x=6)$.

(iii) $P(\text{at most one is defective}) = P(x=0) + P(x=1)$

Poisson's distribution

$$P(x) = \frac{e^{-m} m^x}{x!}$$

Ex: There is a chance of accident is 3 per day. Find the probability that on a particular day 4 accident can be occured.

(3)

$\mu = 3$ accidents/day

$P(x=4) = ?$

$$P(x=4) = \frac{e^{-3} \cdot 3^4}{4!}$$

$= 0.168$ Ans

Q. There is a chance of accident is 4 accidents/day. Find probability that

(i) 2 accident can occur

(ii) At least 2 accidents

can At most one accident =

Journal Entries

Date	Particulars	L/F	Debit	Credit
(i)	Bank charges A/c		1360	
	To Bank			1360
	(Being Bank charges)			
(ii)	Bank A/c		620	
	To dividend Income			620
	(To record dividend credited by bank)			
(iii)	Bank A/c		600	
	To drawing A/c			600
	(Being correcting entry)			
(iv)	A/c Receivable A/c		1240	
	To Bank A/c			1240
	(To record NSF cheque)			