Assignment 1

Q) Calculate the mean, median, mode, standard deviation and inter quartile range of the following data.

4, 7, 9, 9, 11, 15, 18, 18, 18, 25

Ascending Order

4, 7, 9, 9, 11, 15, 18, 18, 18, 25

N = 10 → i.e Even.

① mean = $\frac{4+7+9+9+11+15+18+18+18+25}{10}$

$= \frac{134}{10}$

mean = 13.4

② median

N = 10 → i.e Even

∴ The median is between middle two no. i.e 11 and 15

∴ median = $\frac{11+15}{2}$

$= \frac{26}{2}$

∴ median = 13

③ mode

here mode = 18 as it is repeated 3 times i.e maximum.

x	$x-\bar{x}$	$(x-\bar{x})^2$
4	-9.4	88.36
7	-6.4	40.96
9	-4.4	19.36
9	-4.4	19.36
9	-4.4	5.76
11	-2.4	5.76
15	2.4	29.16
18	5.4	29.16
18	5.4	29.16
18	5.4	153.76
25	12.4	420.8

Total = 134

$\bar{x}$ mean = 13.4

$$\text{var} = \frac{\Sigma (x-\bar{x})^2}{n}$$

$$= \frac{420.8}{10}$$

$$\text{var} = 42.08$$

(4) $\therefore S.D = \sqrt{42.08}$

$S.D. = 6.488690$

(5) median = 13

i.e 50% is present Before 13 and 50% after 13.

Q.2 It is assumed that claims arising on an industrial policy can be modelled as a Poisson Process at a rate of 0.5 per year

→ i) $\lambda = 0.5$.

$x = 0$

$$P(X=0) = \frac{(0.5)^0 e^{-0.5}}{0!}$$

$$= \frac{1.}{e^{0.5}}$$

$$= 0.6065$$

Q4) Given male = 10.
Female = 8
out of 10 male = 6 qualified actaries.
out of 8 female = 7 qualified actaries

Find = Select team of two worker.
Constisting quavified people
and leat one femak.

solution.
case1 = Out of two qualified
one man and one female.

$P(1) = {}^{n}C_r =$
$= {}^{6}C_1 \times {}^{7}C_1$
$= 6 \times 7$
$P(1) = 42 \longrightarrow ①$

case2 = Out of two qualified a
two are female.

$P(2) = {}^{7}C_2$
$= \frac{n!}{2!(5!} = \frac{7 \times 6 \times 5!}{2 \times 1 (5!)}$
$P(2) = 21$

P(At least a female) = P(1) or P(2)
= P(1) + P(2)
= 42 + 21
= 63

Q5.→ Given
(Level 1) = next day delivery
(Level 2) = 2-day delivery
(Level 3) = 3-day delivery
Let 100 package be delivered
L1 delivery = 40% → 40 packages
L2 delivery = 50% → 50 Packa
L3 delivery = 10% → 10 Package

Late L1 delivery = 20% → 20 Pack
Late L2 delivery = 40% → 40 Pack
Late L3 delivery = 10% → 10 Pac

Find P(late package via Level 2 ...

$P(LP.via\,L2) = \frac{40}{50}$

P(LP.via L2) = 0.8

Q11 → Total Children = 7
Boys = 5
Girls = 2

$P(B) = \frac{5}{7} \Rightarrow P(G) = \frac{2}{7}$

$P(\text{Next 3 Boys}) = 3 \times \frac{5}{7}$

$= 2$

$P(\text{Next 3 Girls}) = 3 \times \frac{2}{7}$

$= 0.428$

$\therefore P(\text{Next 3 boys}) = 1 - 0.428$

$= 0.571.$

Q12) $\lambda = 10$ per day.

(a) $x = 2.$

$P(X=2) = \frac{(10)^2 e^{-10}}{2!}$

$= \frac{100\, e^{-10}}{2}$

$= 50 \times 0.0000454$

$= 0.00220$