Distribution ASSIGNMENT

Q.2. $\mu = 38000$

$\sigma = 10000$

(a) $\frac{50000 - 38000}{10000} = \frac{12000}{10000} = 1.2$

Z score for 1.2 = .8461

$1 - .8461$

$= .1539$

∴ The no. of firms with sale over 50000 is $2000 \times$ = 307

(b) $\frac{41000 - 38000}{10000} = \frac{3000}{10000} = .3$

zscore for 41000 = .6179

$\frac{38500 - 38000}{10000} = \frac{500}{10000} = .05$

Z score for 38500 = 5199

$.6179 - .5199 = .098$

∴ The no. of firm with sale = 196

(c)

50000 = .1539 (from a)

$$\frac{30000 - 38000}{10000} = \frac{-8000}{10000} = -.8$$

Zscore for 30000 = .2119

Q.3

Q = 20

wQ = 5

So = 20 − 5 = 15 ∴ ¼ Q wrong

∴ 1 − r

= 1 − ¼ = ¾

$$= {}^{20}C_5 \times (1/4)^{15} \times (3/4)^5$$

$$= \frac{20 \times 19 \times 18 \times 17 \times 16}{5 \times 4 \times 3 \times 2 \times 1} \times (1/4)^{15} \times (3/4)^5$$

$$= \frac{1860480}{120} = 15,504$$

$$= 15504 \times (1/4)^{15} \times (3/4)^5$$

=

Q.7.

$b(x_1 = 0,5,.3) + (x_2 = 1,5,.3) + (x_3 = 2,5,.3)$

$= .1681 + .3601 + .3087$

∴ The chances of getting at least 2 accepted is sum of $x_3 = .8369$

Q.12). $n = 20$

$P = 5\%$ ie, $.05$, $x = 0$

(a) less than 1

$P = {}_{20}C^{0} \times .05^{0} \times .95^{20}$

$P_0 = .3585$

(b) less than 1 or equal to $1 = x = \leq 1$

$P = {}_{20}C^{1} \times .05^{1} \times .95^{19}$

$P_1 = .3774$

∴ $P_1 + P_0 = .3585 + .3774$

$= .7359$

(c) more. 2 sites

$P_2 = {}_{20}C^{2} \times .05^{2} \times .95^{18}$

$= .1887$

∴ $P_0 + P_1 + P_2 = .358 + .3774 + .1887$

$= .9246$

Q.13

$n = 5$

$P = 5\% \text{ i.e. } .05$

(a) Exactly twice in 5 year

$$P = {}_5C^2 \times .05^2 \times .95^3$$

$$= .0214$$

(b) exactly twice in 2 year

$$P = {}_2C^2 \times .05^2 \times .95^0$$

$$= .0025$$

(c) at least once in next 4 year

$$P = {}_4C^0 \times .05^0 \times .95^0$$

$$= 1 - .8145$$

$$= .1855$$

Q.14 $n = 15$

$P = .2$

(a) exactly 2 of 15

$$P = {}_{15}C^2 \times .2^2 \times .8^{13}$$

$$= .2268$$