STATISTICS TEST

S. Dhanish
19BCS4023

1) cards = 52

Diamond = 13

Heart = 13

Spade = 13

Required probability $= \frac{{}^{13}C_1 \times {}^{13}C_1 \times {}^{13}C_1}{{}^{52}C_3}$

$= \frac{13 \times 13 \times 13}{52 \times 51 \times 50}$

$= 2197 / 132600$

$= 0.0165$

2) Action Movies = 42% $\rightarrow P(A)$

comedy movies = 54% $\rightarrow P(B)$

Drama Movies = 36% $\rightarrow P(C)$

Horror Movies = 12% $\rightarrow P(D)$

a) Either action or Drama

$P(A \cup C) = P(A) + P(C) - P(A \cap C)$

$= 42 + 36 - 0$

$P(A \cup C) = 78/100$

$= 0.78$

Either comedy or horror Movies = $54/100 + 12/100$

$= 66/100$

$= 0.66.$

3) Bag A = 3 red, 5 black

Bag B = 4 white, 7 black

$P(A) = P(B) = 1/2$

$P(B/A)$ = probability of black ball from bag bag A.

$P(A) = P(B) = 1/2$ | $P(A, B1) = 5/8$

$P(B, B1) = 7/11$

$P(\text{Black}) = P(A \cap B1) + P(B \cap B1)$

(or) $= 1/2 \times 5/8 + 1/2 \times 7/11$

$P(B1)$

$= 1/2 \left[\frac{5}{8} + 7/11\right] = 1/2 \left[\frac{55+56}{88}\right]$

$= 1/2 \left[\frac{111}{88}\right]$

$P\left(\frac{B}{B1}\right) = \frac{P(B \cap B1)}{P(B1)} = \frac{1/2 \times \frac{7}{11}}{1/2 \times \frac{111}{88}} = \frac{7}{11} \times \frac{8}{111} = \frac{56}{111}$ 1,

4) Given:

450 application in 1 hour

By poisson distribution.

a) $\lambda = \frac{15}{60} = \frac{15}{2}$

$\lambda = 15/2$, $x = 10$

$P(x=x) = \frac{e^{-15/2} \cdot (15/2)^{10}}{10!}$

$= 0.0858$

b) $P(x=x) = \frac{e^{-15/2} \cdot (15/2)^{17}}{17!}$

$= 0.6321$

6) 75th percentile value = ?

Average = $ 350870.

S.D = $ 12405

Percentile value = Average + (Z × S.D)

where Z => Z table value

(Z value for 75th percentile = 0.67)

$= 350870 + (0.67 \times 12405)$

$= 350870 + 8311.35$

75^{th} percentile value = 389181.3811