Seat No. : _____

N29-101

December-2014

B.B.A., Sem.-III

CC-206 : Statistics
(Elementary Statistics)

Time : 3 Hours] **[Max. Marks : 70**

1, (a) Define the following terms : **4**

(i) Event

(ii) Impossible Event

(iii) Union of two Events

(iv) Independent Events

OR

If P(A) = 0.45, P(B)= 0.65 and P(A $\cup$ B) = 0.75, then find :

(i) P(A/B)

(ii) P(A'/B')

(b) A box has 5 white, 4 black and 3 red balls. 3 balls are selected from it. Find the probability that; **5**

(i) All 3 balls are different colour

(ii) All 3 balls are of same colour

OR

Box I has 5 black and 5 white balls. Box II has 6 black and 4 white balls. One box is selected at random and from it one ball is drawn. Find the probability that a selected ball is of black colour.

(c) A coin is tossed 3 times. Find the expected value of No. of tails occurred. **5**

OR

There are 1000 tickets and out of them one ticket bear a prize of ₹ 10,000. Each ticket costs ₹ 200. Find expected gain of a person if he will purchase one ticket.

2. (a) Five coins are tossed together. Find the probability of getting **4**

(i) all heads

(ii) only one head

OR

In a binomial distribution, mean = 4 and variance = 4/3. Find probability function of Binomial Distribution. Also find P(X = 2).

(b) For a Poisson variate if P(1) = P(2), then find (i) P(X = 0) (ii) P(X = 3). ($e^{-2} = 0.135$) **5**

OR

The variance of Poisson variate is 0.81. Find (i) P(X = 1) (ii) P(X = 2). ($e^{-0.81} = 0.449$)

(c) Write probability mass function of Binomial and Hypergeometric Distributions. Also write their mean and variance. **5**

OR

From a pack of 52 cards, 4 cards are drawn one by one. Find the probability of getting atleast one king in them.

3. (a) Explain : **4**

(i) Probable Error

(ii) Positive correlation

(iii) Coefficient of Determination

(iv) Regression coefficients

OR

State the difference between correlation and regression Analysis.

(b) Find (i) by*x* (ii) b*x*y for given data : **5**

x	1	5	3	2	1	2	7	3
y	6	1	0	0	1	2	1	5

OR

Find correlation coefficient for given data by Spearman's Rank correlation method :

x	3	–2	–1	6	4	–2	5	7
y	5	13	12	–1	2	20	0	–3

(c) If n = 10, $\bar{x} = 30$, $\bar{y} = 40$, $\Sigma(x - \bar{x})^2 = 120$, $\Sigma(y - \bar{y})^2 = 346$, $\Sigma(x - \bar{x})(y - \bar{y}) = 193$, then find equation of line of "y on x". Also estimate y if $x = 100$. **5**

OR

If $r_{12} = 0.8$, $r_{13} = -0.4$, $r_{23} = -0.56$, then find

(i) $R_{1.23}$ (ii) $r_{12.3}$

4. (a) State difference between control charts for variable and attributes. **4**

OR

Write control limits for following :

(i) np-chart

(ii) $\bar{X}$-Chart

(b) Draw an appropriate control chart for given data and give your conclusion : **5**

$\bar{X}$:	34	41	33	36	25	46	44	39
R :	11	7	10	11	19	14	12	15

($A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.12$)

OR

Examining samples of 100 units during 10 days the no. of defective units are 2, 8, 0, 5, 6, 8, 12, 1, 3, 15. Prepare np-chart and see whether process is under control or not.

(c) For SSP (100, 10, 1), find the probability of accepting a lot having 4% defective items. **5**

OR

For a SSP (2000, 300, 3), find (i) ASN (ii) AOQ if p = 1%. ($e^{-3} = 0.0498$)

5. Answer the following questions : **14**

(1) If A and B are mutually exhaustive events then $P(A \cup B) =$ _____.

(2) If A and B are independent events then $P(B/A) =$ _____.

(3) If A and B are mutually exclusive events then $P(A \cup B) =$ _____.

(4) For a random variable X, $E(X^2) = 21$, $E(X) = 5$. (True / False).

(5) For a Binomial distribution if $n = 10$, $p = ½$ then its S.D. = _____.

(6) The mean and variance of Poisson variate are 2 and 3 respectively. (True / False)

(7) Both liens of Regression are intersecting each other at _____.

(8) Write the range of $R_{3.12}$.

(9) If $b_{12.3} = 0.18$, $b_{21.3} = 2.73$ then $r_{12.3} =$ _____.

(10) What is sign of regression coefficient by$x$ where y = price and x = Demand ?

(11) In C-chart if $\bar{C} = 4$ then find its UCL & LCL.

(12) $\bar{X}$ and R charts are based on _____ distribution.

(13) For SSP (1000, 100, 2), if $P_a = 0.2379$ then find its ATI.

(14) In AOQ curve the maximum value of AOQ is called _____.