



Seat No. : _____

DT-101

December-2025

B.B.A., Sem.-III

CC-206 : Elementary Statistics

Time : 2:30 Hours]

[Max. Marks : 70

- Instructions :** (1) Figures on right indicate marks.
 (2) Use of simple calculator is allowed.
 (3) Graph will be provided by request.

1. (A) Define : 7
 (1) Random Experiment
 (2) Independent Events
 (3) Equally Likely Events
 (4) Sample Space

- (B) Find $E(x)$, if the probability distribution of a random variable x is as follows : 7

x	-2	-1	0	1	2
$p(x)$	0.15	0.30	0.30	0.15	0.10

OR

1. (A) For a random variable x , $E(x) = -0.25$, $E(x^2) = 1.45$ find the value of $V(x)$ and $V(2x + 5)$. 7
 (B) Find expected demand i.e., $E(x)$ of the following probability distribution : 7

x (Demand)	5	6	7	8	9	10
$p(x)$	0.05	0.1	0.3	0.4	0.1	0.05

2. (A) State the probability mass function of Binomial Distribution and write 3 properties of Binomial Distribution. 7
 (B) If x is a Poisson variate and $P(x = 1) = P(x = 2)$, then find $P(x = 0)$. 7

OR

2. (A) If 3% of electric bulbs manufactured by a company are defective, find the probability that in a sample of 100 bulbs, exactly 5 bulbs are defective. 7
[$e^{-3} = 0.0497$]

- (B) 3 cards are drawn at random from a pack of 52 cards. Find the probabilities that,
 (i) all the cards are of spade (ii) all are aces. 7

3. (A) State properties of regression coefficients. 7
 (B) Find correlation coefficient between x and y from the following data : 7

$$n = 8, \bar{x} = 51, \bar{y} = 34, \sum(x - 51)^2 = 42, \sum(y - 34)^2 = 60, \sum(x - 51)(y - 34) = 16$$

OR

3. (A) Find regression equation of the marks (y) on study hours (x) : 7

Hours Studied (x)	2	4	6	8	10
Marks (y)	40	50	60	70	80

- (B) Given that $r_{12} = 0.6$, $r_{13} = 0.7$, $r_{23} = 0.65$, determine $R_{1.23}$. 7

4. (A) Draw C-chart and state your conclusion : 7

Group Number	1	2	3	4	5	6	7	8	9	10
No. of Defects	4	8	7	7	2	3	2	5	6	8

- (B) Find UCL and LCL : 7

\bar{X}	43	49	37	44	45	37	51	46	43	47
R	5	6	5	7	7	4	8	6	4	6

$$[A_2 = 0.58]$$

OR

4. (A) For a single sampling plan (50, 10, 0), find probability of accepting a lot when proportion defective is $p' = 0.04$. 7

- (B) For a single sampling plan (1000, 100, 2) and $p' = 0.01$, find p' Pa. 7

5. Answer the following : (Any 7) 14

- (1) C-chart is based on
 - (a) Binomial
 - (b) Poisson
- (2) On which distribution np-chart is based ?
 - (a) Binomial
 - (b) Poisson
- (3) If all the units of the lot are non-defective, the probability of acceptance of the lot is _____.
 - (a) 1
 - (b) 0
- (4) The two regression coefficients are 0.8 and 0.2, correlation coefficient is _____.
 - (a) 0.16
 - (b) 0.4
- (5) The _____ are independent of change of origin, but not of scale.
 - (a) Regression coefficient
 - (b) Correlation coefficient
- (6) The correlation coefficient lies between _____ and _____.
 - (a) -1, +1
 - (b) +0, +1
- (7) The mean of a Poisson variate is 4, hence its variance is _____.
 - (a) 4
 - (b) 2
- (8) In _____ distribution, variance is always less than its mean.
 - (a) Binomial
 - (b) Poisson
- (9) Hypergeometric distribution is a distribution of a _____ variable.
 - (a) Continuous
 - (b) Discrete
- (10) If $E(x) = 5$, then $E(2x + 3) =$ _____.
 - (a) 10
 - (b) 13
- (11) $V(x) = 5$, then $V(2x + 3) =$ _____.
 - (a) 20
 - (b) 23
- (12) Probability of an event is always between _____ and _____.
 - (a) 0, +1
 - (b) -1, +1