

{This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 5242 F Your Roll No.....

Unique Paper Code : 290562

Name of the Paper : MTA : Basic Mathematical Statistics – I

Name of the Course : B.A. (Prog.) Application Course

Semester : V

Duration : 2 Hours

Maximum Marks : 55

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question No. 1 is Compulsory.
3. Attempt any **four** questions from Question No. 2 to 7, selecting at least one question from each of the Section I, II and III.
4. Give full explanation for each question.
5. Marks are indicated against each question.
6. Use of Simple Calculator is allowed.

1. Short answers with proper justification are expected in all the five parts of this question. Each part is of 3 marks. (3×5=15)

(i) What do you understand by 'histogram' ? How do you construct it ?

(ii) Coefficient of variation of two series is 75% and 90% and their standard deviations are 15 and 18 respectively. Find their means.

(iii) The equations of two regression lines obtained in a correlation analysis are as follows :

$$3x + 12y = 19, 3y + 9x = 46$$

Find the value of the correlation coefficient.

P.T.O.

(iv) An article consists of two parts A and B. Their manufacturing process of each part is such that probability of defect in A is 0.08 and in B is 0.05. What is the probability that the assembled product will not have any defect ?

(v) The following measures were computed from a problem in statistics :

Mode = 83, Mean = 74 and Median = 77.

Comment on the skewness of the distribution. Justify.

SECTION I

2. Following are the records of two players regarding their performance in cricket match :

Scores of Players A :	48	52	55	60	65	45	63	70
Scores of Players B :	33	35	80	70	100	15	41	25

Which player is more consistent in his performance ? (10)

3. Find Karl Pearson's coefficient of skewness :

Wages (in Rs.):	0-10	10-20	20-30	30-40	40-50
Number of workers	15	20	30	25	10

(10)

SECTION II

4. Do reading and TV viewing compete for leisure time? To find out, a communication specialist interviewed a sample of 10 children regarding the number

of books they had read during the last year and the number of hours they had spent watching TV on a daily basis. Their results are as follows :

Number of Books	0	7	2	1	5	4	3	3	0	1
Hours of TV Viewing	3	1	2	2	0	1	3	2	7	4

Compute a Pearson's correlation coefficient for these data and determine whether the correlation is significant. (10)

5. The following table gives the recorded prices and quantities of demand for a commodity.

P (Price in Rs.)	18	12	10	8	7	5
Q (Quantity in thousand quintals)	2	4	5	6	8	11

Estimate the price for the quantity demanded as 10 after finding the appropriate regression equation. (10)

SECTION III

6. The probabilities of X, Y and Z becoming managers are $\frac{4}{9}$, $\frac{2}{9}$ and $\frac{1}{3}$ respectively. The probabilities that the bonus scheme will be introduced if X, Y and Z become managers are $\frac{3}{10}$, $\frac{1}{2}$ and $\frac{4}{5}$ respectively.

- (a) What is the probability that the bonus scheme will be introduced ?
- (b) If the bonus scheme has been introduced, what is the probability that the manager appointed was Z. (10)

7. Four cards are drawn from a pack of cards. Find the probability that :

(a) there is one card of each suit

(b) two cards are spades and two are hearts

(c) all the four are spades and one of them is a queen

(10)