Sr. No. of Question Paper : 5291   D   Your Roll No................

Unique Paper Code   : 290562

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

Name of the Paper   : Basic Mathematical Statistics

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) Distinguish between primary and secondary data.

    (ii) Calculate the mean of the following data and draw the bar graph.

Marks	No. of students
0–4	3
5–9	6
10–14	9
15–19	15

(iii) One patient's blood pressure, measured daily over several weeks, averaged 182 with a standard deviation of 12.6, while that of another patient averaged 124 with a standard deviation of 9.4. Which patient's blood pressure is relatively more variable ?

(iv) Comment on the following values of the regression coefficient : b_{xy} = 3.2 and b_{yx} = 0.8. Justify your comment.

(v) If P(A) = 0.50, P(B) = 0.40 and P(AUB) = 0.60, then find whether A and B are independent events.

SECTION I

2. Find out the kurtosis of the data give below : (10)

Income in Rs.	Number of workers
20–40	2
40–60	4
60–80	3
80–100	1

3. Following is the distribution of marks obtained by 500 students in an exam. Calculate Quartiles. (10)

Marks (More Than)	No. of Candidates
0	500
10	460
20	400
30	200
40	100
50	30

SECTION II

4. The equations of two regression lines obtained in a correlation analysis are given below :

$$3X + 12Y = 10 \text{ and } 3Y + 9X = 46$$

Obtain   (i) Value of correlation coefficient.

         (ii) Mean of X and Y.

         (iii) Regression coefficients of X on Y and of Y on X.   (10)

5. Calculate the Karl Pearson's correlation coefficient of the following data and interpret :

Height of Father X	65	66	67	67	68	69	70	72
Height of Son Y	67	68	65	68	72	72	69	71

(10)

SECTION III

6. In a bolt factory, machines A, B and C manufacture respectively 25%, 35% and 40%. Of the total of outputs of machines A, B and C, 5%, 4% and 2% respectively are defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machine B.   (10)

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

     (i) Two cards are spades and two are hearts.

(ii) All the four are spades and one of them is a king.

(iii) There is one card of each suit.   (10)