

**BBA-1079**

**BBA (Semester-II) Exam.**

**Business Mathematics**

*Time : Three Hours*

*Maximum Marks : 70*

**Note :- Attempt questions from all the sections.**

**SECTION - A**

*(Short Answer Type Questions)*

**Note :** Attempt **any seven** questions. Each question carries 4 marks.  $7 \times 4 = 28$

1. The mean wage of 100 workers in a factory running two shifts of 60 and 40 workers is 38. The mean wage of 60 workers in the morning shift is Rs. 40. Find the mean wage of 40 workers in the evening shift.
2. Discuss the meaning of correlation. Distinguish between positive & negative correlation.
3. State the addition and multiplicative rule of Probability.
4. What do you mean by Annuity? When it is calculated?

**[P. T. O.]**

5. Solve the following L.P.P. Graphically

$$\text{Max. } z = 3x_1 + 4x_2$$

Subject to,

$$x_1 + 2x_2 \leq 16$$

$$3x_1 + 4x_2 \geq 12$$

$$\& x_1, x_2 \geq 0$$

6. Define union and Intersection of sets with proper examples.
7. Calculate mean deviation from mode for the following data. Also compute the coefficient of mean deviation :

| Size | Frequency |
|------|-----------|
| 2    | 2         |
| 4    | 2         |
| 6    | 4         |
| 8    | 5         |
| 10   | 3         |
| 12   | 2         |
| 14   | 1         |
| 16   | 1         |

8. Define stratified random sampling. What are its advantage?
9. Construct the dual of the following L.P.P.

$$\text{Min. } z = x_1 - 4x_2$$

$$\text{S. to, } 2x_1 + x_2 \geq 14$$

$$x_1 + x_2 \geq 2$$

$$x_1 + 4x_2 \geq 5$$

$$\text{where, } x_1, x_2 \geq 0$$

10. The sum of three numbers of which in A.P. is 15. If these are added by 1, 4 and 19 to them respectively, are converted into G.P. Find these numbers.

### SECTION - B

(Long Answer Type Questions)

**Note :** Attempt **any two** questions. Each question carries 21 marks.  $21 \times 2 = 42$

1. From the following data, Calculate the coefficient of correlation between age of students and their playing habits :

| Age | No. of students | Regular Players |
|-----|-----------------|-----------------|
| 15  | 25              | 20              |
| 16  | 20              | 15              |
| 17  | 15              | 9               |
| 18  | 120             | 48              |
| 19  | 10              | 3               |
| 20  | 80              | 12              |

2. Solve the following systems of equations by matrix method.

$$5x + 6y + 4z = 15$$

$$x + 2y + 2z = 5$$

$$15x - 15y + 3z = 3$$

3. The total cost of producing and marketing  $x$  units of a commodity is given by

$$C = x^3 - 315x^2 + 27000x + 20000$$

Determine the number of units that should be produced to minimize the cost.

4. The following data were recorded for three distributions :

| Distributions | N  | $\bar{X}$ | $\sigma$ |
|---------------|----|-----------|----------|
| A             | 20 | 60        | 8        |
| B             | 50 | 50        | 12       |
| C             | 60 | 40        | 20       |

Obtain combined mean and standard deviation of all the three distributions together.