

**B.C.A Semester - 3 (NEP-2020) Examination****OCT/NOV-2024****Mathematics (Multidisciplinary Course)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 Answer the Followings Questions. (Any Two) (10)

- 1) What is set ? Explain different methods to represent set. Explain properties of set.
- 2) Write short note on set operations.
- 3) Explain section formula with example.
- 4) Explain how to find distance between two points in R<sup>2</sup>.

Que-2 Answer the Followings Questions. (Any Two) (10)

- 1) What is Matrix? Explain types of Matrix.
- 2) Explain subtraction and division of Matrix.
- 3) Explain Adjoint of 3 x 3 matrix.
- 4) Explain Transpose of Matrix and determinant of Matrix.

Que-3 Answer the Followings Questions. (Any Two) (10)

- 1) Explain Mode for grouped and ungrouped data.
- 2) Explain Types of Graphs for frequency distribution.
- 3) Explain Mean Deviation and Standard Deviation.
- 4) Do as directed :

(A) Following are the marks of students in Mathematics:

50, 53, 50, 51, 48, 93, 90, 92, 91, 90. Find the mean of the marks.

(B) Calculate the mean, variance and standard deviation for the following data:

| Class interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
|----------------|------|-------|-------|-------|-------|-------|
| Frequency      | 27   | 10    | 7     | 5     | 4     | 2     |

Que-4 Answer the Followings Questions. (Any Two) (10)

- 1) What is Probability? Explain its formula and Applications of Probability.
- 2) What is Sample Space in Probability. Explain Sample space with example.
- 3) A bag contains 10 oranges and 20 apples out of which 5 apples and 3 oranges are defective. If a person takes out two at random, what is the probability that either both are good or both are apples?
- 4) Explain probability of an event and its types.

Que-5 Answer the Followings Questions. (Any Two) (10)

- 1) Do as directed.
  - (A) Find the value of a, if the distance between the points P(3, -6) and Q(-3, a) is 10 units.
  - (B) Find the coordinates of the point which divides the line segment joining the points (4, 6) and (-5, -4) internally in the ratio 3:2.

- 2) Do as directed.

(A) Find A x B:  $A = \begin{bmatrix} 12 & 8 & 4 \\ 3 & 17 & 14 \\ 9 & 8 & 10 \end{bmatrix}, B = \begin{bmatrix} 5 & 19 & 3 \\ 6 & 15 & 9 \\ 7 & 8 & 16 \end{bmatrix}$

(B) Find the Adjoint of following Matrix.  $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$

- 3) Explain Grouped and ungrouped table.
- 4) Explain types of Probability.

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