



BCA 102N

B.C.A. (PART-I) (Ist SEMESTER) EXAMINATION, 2024-25
(CBCS SYSTEM)

1881

(BCA 102N : PRINCIPLES OF MATHEMATICS)

Paper : II

Time : Three Hours]

[Maximum Marks : 75

- Note:** (i) Answer five questions in all.
(ii) Question No. 1 is compulsory.
(iii) Answer two questions from Section A and Section B each.
(iv) All questions carry equal marks.
(v) Symbols have their usual meaning.

1. Answer all parts of the following :
- (a) Define singleton set with the help of suitable example.
- (b) Explain composition of functions.
- (c) Define symmetric and skew-symmetric matrices.
- (d) Find the 7th term of the A.P.
8, 5, 2, -1, -4,

- (e) For a moderately skewed distribution of marks in statistics for a group of 200 students, the mean mark and median mark were found to be 55.60 and 52.40. What is the modal mark ?

Section-A

2. In a class of 60 students, 23 play hockey, 15 play basketball, 20 play cricket and 7 play hockey and basketball, 5 play cricket and basketball, 4 play hockey and cricket, 15 do not play any of the three games. Find.
- (i) How many play hockey, basketball and cricket ?
 - (ii) How many play hockey but not cricket ?
 - (iii) How many play hockey and cricket but not basketball ?
3. Explain various types of function and relation with the help of suitable example.

4. Define Inverse of a square matrix solve using matrix method, the following system of equations :

$$x + y + z = 6$$

$$x - y + z = 2$$

$$2x + y - z = 1$$

5. Calculate the mean and mode from the following data :

Class :	20-25	25-30	30-35	35-40	40-45	45-50
Frequency :	1	3	8	12	7	5

Section-B

6. (a) Let N be the set of natural numbers and a relation R is defined over N as :

$$R = \{(x, y) : x, y \in N, x + 2y = 10\}$$

Check it for reflexivity, symmetricity and transitivity.

(b) If $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & -1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$, find

$$2A - 3B.$$

7. (a) Which term of the A.P. $\frac{3}{\sqrt{7}}, \frac{4}{\sqrt{7}}, \frac{5}{\sqrt{7}}, \dots$ is $\frac{17}{\sqrt{7}}$?

- (b) Find the three numbers in G.P. Whose sum is 19 and product is 216.
8. (a) What do you understand by central tendency ? What are the merits and demerits of arithmetic mean ?
- (b) Define statistic and explain the scope of statistic in various areas.
9. Attempt any two of the following :
- (a) Methods of describing a set
- (b) Composition of functions
- (c) Properties of determinant

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