Roll No. ....

Total No. of Questions : 13]   **[Total No. of Pages : 03**

Paper ID [A0202]

(Please fill this Paper ID in OMR Sheet)

BCA (102) (S05) (O) (Sem. - 1ˢᵗ)

BRIDGE COURSE IN MATHEMATICS

Time : 03 Hours   **Maximum Marks : 75**

Instruction to Candidates:

    1) Section - A is **Compulsory**.

    2) Attempt any **Nine** questions from Section - B.

Section - A

Q1)   *(15 × 2 = 30)*

    a) Prove that $A \cap A^C = f$ by example.

    b) Draw Venn diagram of $B - A$ and $A \quad B$.

    c) If $A = \{-3, 0, 1, 2\}$ & $B = \{1, 2, 3, 4\}$ then write $B - A$ and $A \, D \, B$.

    d) Find $A \quad B$ & $A \quad B$ if : $A = \{2, 3, 4, 8\}$, $B = \{1, 6\}$

    e) If $A = \{1, 2, 3\}$, $B = \{2, 5, 6, 1\}$ & $C = \{1, 6, 5, 9\}$ then find $(A \quad B) \times C$.

    f) Expand $(1 - 2x)^3$ by Binomial. $\left(x^2 - \dfrac{1}{x}\right)$

    g) Define cofactor of matrix with example.

    h) Write the difference between matrix and determined.

    i) Write 4ᵗʰ term of   .

    j) If $A = \begin{bmatrix} 5 & 1 & -3 \\ 6 & 7 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 6 & 7 \\ 1 & 0 & -17 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 6 & 1 \\ 5 & 3 & 7 \end{bmatrix}$

       find $A + B - C$.

    k) Define Raw Data and discrete frequency distribution.

    l) Define mode and write formula to find mode.

    m) Find range and its coefficient from data :

Size :	5	7	9	10	11	12
Freq. :	1	3	5	7	4	3

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n) Define pure and applied statistics.

o) Find mean of the following marks obtained by 10 students in mathematics.

52, 40, 70, 75, 43, 40, 35, 65, 48, 62

Section - B

(9 × 5 = 45)

Q2) Prove that $A - B = A \cap B^C$.

Q3) Let $A = \{1, 2\}$ and $B = \{3, 4\}$, find the number of relations from A into B and B into A.

Q4) Find the range of function   .

Q5) Prove $A \times (B \cup C) = (A \times B) \quad (A \times C)$.

Q6) Prove by mathematical induction

$\forall n \in N$.

Q7) Using the Binomial theorem, prove that

$C_1 + 2.C_2\, x + 3.\, C_3 x^2 + \text{----------} + n.C_n\, x^{n-1} =$

Q8) Evaluate the determinant $\begin{vmatrix} 1 & x & yz \\ 1 & y & zx \\ 1 & z & xy \end{vmatrix}$.

$\frac{(1+x)^{n-1}}{\sqrt{x^2-1}}, x \in R --- (2n-1)(2n+1) = \frac{n}{3}(4n^2$

Q9) Prove that $A^3 - 4A^2 - 3A + 11\, I = 0$ where $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & -1 \\ 1 & 2 & 3 \end{bmatrix}$.

Q10) Find mean for the data :

Marks :	0-10	10-20	20-30	30-40	40-50	50-60
No. of girls :	6	8	14	16	4	2

Q11) Write a note on the following :

(a) Graphical representation of distribution.

(b) Histogram.

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Q12) Find the mode for the following data :

Marks	:	0-10	10-20	20-30	30-40	40-50
No. of Students	:	4	5	6	9	2

Q13) Calculate the medean of distribution of the marks obtained by the students.

Marks	:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	:	3	9	15	30	18	5

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