Roll No. | | | | | | | | | | | |

Total No. of Pages: 01
Total No. of Questions: 07

BCA (Sem.-1ST)

MATHEMATICS(BRIDGE COURSE)

Subject Code: BC-102
Paper ID: B0202

Time: 3 Hrs. **Max. Marks: 60**

Instruction to the Candidates:-

1. *Section- A: is compulsory consisting of Ten question carrying two marks each.*
2. *Section-B contain Six question carrying Ten marks each and students has to attempt any four questions*

Section -A

1.

a. Prove that AC ø implies A=ø
b. If A={1,3,5,7} and B={2,4|, find A x B and B x A
c. If $f(x) = 3x^4 - 5x^2 + 9$, find f{x - 1)
d. Write the middle term in the expansion of $\left(2x^2 - \frac{1}{x}\right)$
e. Prove that A -B =A U B'
f. If $P(n)$ is the statement n(n +1) is even', then what is $P(4)$
g. Solve the matrix equation $[1 \quad 2 \quad l] \begin{vmatrix} 1 & 2 & 0 & 0 \\ 2 & 0 & 1 & 2 \\ 1 & 0 & 2 & x \end{vmatrix} = 0$
h. Define Mean?
i. Find the co-efficient of x^4 in the expansion of $\left(\frac{1-x}{1+x}\right)$
j. If the points (3,-2), (x, 2), (8, 8) and collinear, find x using determinant.

Section -B

2 In a town of 10,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families buy newspaper C, 15% families buy newspaper A and B, 3% families buy newspaper B and C and 4% families buy newspaper A and C. If 2% families buy all the three newspaper, Find the number of families which buy (i) A only (ii) B only (iii) none of A, B and C.

3. Let R be the relation on the set Z of all integers defined by (x, y) ∈ R => x - y is divisible by ***n***

Prove that :-

(i) (x, x) ∈ R for all x ∈ Z
(ii) (x, y) ∈ R => (y, x) ∈ R for all x, y ∈ Z
(iii) (x, y) ∈ R and (y, z) ∈ R => (x, z) ∈ R for all x, y, z ∈ Z

4. Prove that by using Principal Mathematical Induction
$2.7^n+3.5^n-5$ is divisible by 24, for all n ∈ N

5. Without expanding the determinant, show that $\left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$ is a factor of the following determinant $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$

6. If $y = \frac{3}{4} + \frac{3.5}{4.8} + \frac{3.5.7}{4.8.12} + \text{--------}$ To ∞ then show that $y^2 + 2y - 7 = 0$

7. From the Data given below find the arithmetic average under the Step Deviation and Shortest method.

Wages in Rs:	1-7	8-14	15-21	22-28	29-35
No. of Firms	3	17	12	11	7

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