

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

**BCA (Sem.-1<sup>st</sup>) (2007 to 2010 Batch)**  
**MATHEMATICS (Bridge Course)**  
**Subject Code : BC-102**  
**Paper ID : [B0202]**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

**SECTION-A**

**1. Write briefly**

- b) Draw the Venn diagram to illustrate :  $\{1,2,3,4,5\} \cup \{4,5,6,7,8\}$ .
- c) Define intersection of sets.
- d) If  $\cos A = 2 \sin A$ , find the value of  $\tan A$  and  $\sec A$ .
- e) Expand  $(a + 4)^5$  using binomial theorem.
- f) Define matrix.
- g) Differentiate between primary and secondary data.
- h) If  $P(n)$  be a statement " $n(n + 1)(n + 2)$  is divisible by 7", prove that  $P(5)$  is true but  $P(4)$  is not.
- i) Solve for  $x$ , if  $\begin{vmatrix} 3 & x \\ 4 & 5 \end{vmatrix} = 3$ .
- j) List four sources of collecting secondary data.

**SECTION-B**

2. (a) State and prove De Morgan's Law.

(b) Let  $A=\{5,6,7\}$  and  $B=\{2,5\}$  and  $C=\{5,8,9\}$ , then show that  
 $A \times (B \cap C) = (A \times B) \cap (A \times C)$

3. Find the middle term in the expansion of  $[-3x - (1/3x)]^{11}$

4. Prove for all natural number  $n$ ,

$$1^2 + 3^2 + 5^2 + \dots + (2n - 1)^2 = \frac{n(2n-1)(2n+1)}{3}.$$

5. Prove that  $\frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta} = \sin \theta + \cos \theta$ .

6. Find determinant of A and Cofactor Matrix of A where  $A = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 5 & 2 \end{bmatrix}$ .

7. An incomplete distribution of families according to their expenditure per week is given below. The median and mode for the distribution are Rs. 25 and Rs. 24 respectively. Calculate the missing frequencies and hence mean of the distribution:

10-20	20-30	30-40	40-50	50-10				
		<b>Expenditure:</b>						
		<b>No. of families:</b>		14	?	27	?	15