Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 07

BCA (Sem.–1st) (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

l.

(a) Prove that $A^C - B^C = B - A$ where A and B are two sets.

(b) Show union of two sets using Venn diagram.

(c) Write dual of $(B \cup U) \cap (\phi \cup B') = \phi$

(d) Evaluate ${}^{50}C_{47}$.

(e) Prove that $\sin 2A = \dfrac{2 \tan A}{1 + \tan^2 A}$.

(f) If $\begin{bmatrix} 2x - y \\ x + y \end{bmatrix} = \begin{bmatrix} 3 \\ 6 \end{bmatrix}$ find x and y.

(g) If Z = 40, M = 44, find $\bar{X}$.

(h) Let U = {1, 2, 3, 4, 5, 6, 7}. Does [{1, 2, 3}, {2, 4}, {5, 6, 7}] form a partition? If not why ?

(i) State principle of mathematical induction.

(j) What do you understand by Primary data and Secondary data?

SECTION-B

2. In certain examination 53 percent students pass in Economics 61% in Politics, 60% in History, 24% in Economics and Politics, 35% in Politics and History, 27% in Economics and History and 5% passed in none of these subjects. How many students passed in all the three subjects ?

3. Find $(a + b)^4 - (a - b)^4$ and hence evaluate $(\sqrt{3} + \sqrt{2})^4 - (\sqrt{3} - \sqrt{2})^4$.

4. Use the principle of mathematical induction to prove that

$$1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \ldots + n(n + 1) = \frac{1}{3} n(n + 1)(n + 2) \ \forall \ n \in \mathrm{N}.$$

5. Find the determinant of

$$\begin{bmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{bmatrix}$$

6. Explain any two methods of collecting data with their merits and demerits.

7. Obtain the median wage for the following distribution :

Marks	20-40	40-60	60-80	80-100	100-120	120-140	140-160
No. of Students	4	6	10	16	12	7	3