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Total No. of Questions : 07] [Total No. of Pages : 02

Paper ID [B0202]

(Please fill this Paper ID in OMR Sheet)

BCA (Sem. - 1st)

MATHS (BRIDGE COURSE) (BC - 102)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.

Section - A

Q1) *(10 × 2 = 20)*

a) What are the bases for classification of data?

b) State the basic principles for forming a grouped frequency distribution.

c) State the properties of determinant.

d) State the properties of matrix product.

e) Find the middle term in $\left(\frac{2x^2}{3} + \frac{3}{2x^2}\right)^{10}$.

f) Find the value of $(101)^4$ using Binomial theorem.

g) Define terms, deduction method, induction method and conjectures.

h) Define power set, equal sets and comparable sets.

i) If $A = \{1, 2, 3, 4, 5\}$, $B = \{1, 3, 5, 7, 9\}$ and $C = \{2, 4, 8, 10\}$ Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

j) What is the angle of elevation of the sun when the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole.

Section - B

(4 × 10 = 40)

Q2) Calculate the median and mode of the following frequency distribution

Annual sales (Rs' 0000)	Frequency
less than 10	8
less than 20	20
less than 30	35
less than 40	55
less than 50	62
less than 60	67

Is it possible to calculate A.M? If possible, calculate it.

Q3) Find the value of $\begin{bmatrix} 2 & 4 & 3 & 2 \\ 3 & 6 & 5 & 2 \\ 2 & 5 & 2 & -3 \\ 4 & 5 & 14 & 14 \end{bmatrix}$.

Q4) State and prove Binomial theorem for positive integral Index.

Q5) Prove by mathematical induction that

$$1^2+2^2+3^2+.....+n^2=\frac{n(n+1)(2n+1)}{6}.$$

Q6) From the top of a cliff 150 m high, the angles of depression of two boats which are due north of the observer are 60° and 30°. Find the distance between them.

Q7) A survey of 500 T.V. viewers produced the following information: 285 watch foot ball, 195 watch hockey and 115 watch basket ball. 45 watch foot ball and basket ball, 70 watch foot ball and hockey, 50 watch hockey and basket ball. 50 donot watch any of the three games. How many watch all the three games? How many watch exactly one of the three games.