

Roll No.

Total No. of Questions : 07]

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BCA (Sem. - 1st)
MATHEMATICS (Bridge Course)
SUBJECT CODE : BC - 102(N2)
Paper ID : [B0202]

[Note : Please fill subject code and paper ID on OMR]

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) Define finite set with an example.
- b) What is complement of a set?
- c) What is Relation?
- d) Define even function with an example.
- e) State Binomial theorem.
- f) Explain Nilpotent Matrix.
- g) If $\begin{bmatrix} x & 3x-y \\ 2x+z & 3y-w \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$
Find x, y, z and w .
- h) Define median.
- i) What is Quartile Deviation (Q.D).
- j) Find the value of $\tan 330^\circ$.

Section - B

(4 × 10 = 40)

Q2) Use the principle of mathematical induction to prove

$$1.2 + 2.3 + 3.4 + \dots + n(n+1) = \frac{1}{3} (n)(n+1)(n+2) \text{ for all } n \in \mathbb{N}.$$

Q3) If $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & -1 & 1 \\ 1 & -2 & 3 \end{bmatrix}$, find A^{-1} .

Q4) Prove that $\tan 70^\circ = \tan 20^\circ + 2 \tan 50^\circ$.

Q5) State and prove De Morgan's Laws.

Q6) Find the mean Deviation from the mean

x :	2	5	6	8	10	12
f :	2	8	10	7	8	5

Q7) Find the Domain and Range of the function

$$f(x) = \frac{x+1}{2x+1}.$$

