

Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

BMC I (2013 Batch) (Sem.-3)
MATHEMATICS – III (Computer Oriented)
Subject Code : BMC I-302
Paper ID : [G1182]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Q1 Answer briefly :**

a) If $A = \begin{bmatrix} -3 & -1 \\ 5 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 \\ -1 & 1 \end{bmatrix}$, Find AB.

b) Define Rank of a Square matrix and find the rank of $\begin{bmatrix} 2 & -1 \\ 3 & 5 \end{bmatrix}$.

c) Define Arithmetic mean.

d) Define Standard deviation.

e) Differentiate $\sin x^2$ w.r.t to x .

f) Differentiate $x^2 + 2x$ w. r. t x .

g) Integrate : $x \sin x$ by parts.

h) Solve : $\int_0^{\pi/2} \sin^2 x \, dx$.

i) Define coefficient of variation.

j) Define Square matrix.

SECTION-B

- Q2 Find the inverse of $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$.
- Q3 Compute skewness and kurtosis, if the first four moments of the frequency distribution $f(x)$ about the value $x=4$ are respectively 1, 4, 10 and 45.
- Q4 If $x^3 + y^3 = 3axy$, find the second derivative w.r.t x .
- Q5 Evaluate : $\int_0^1 \frac{\log(1+x)}{1+x^2} dx$.
- Q6 Find a real root of the equation $x^3 - 2x - 5 = 0$ by the method of false position correct to three decimal places.

SECTION-C

- Q7 Use Trapezoidal rule with $n=8$ to estimate $\int_1^5 \sqrt{1+x^2} dx$.
- Q8 The following are scores of two batsmen A and B in a series of innings. Who is the better score getter and who is more consistent?

A	12	115	6	73	7	19	119	36	84	29
B	47	12	16	42	4	51	37	48	13	0

- Q9 The sum of the perimeters of a circle and square is k , where k is some constant. Prove that the sum of their areas is least, when the side of the square is double the radius of the circle.