Roll No. | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 18

BMCI (2014 & Onwards) (Sem.–2)

MATHEMATICS - II

Subject Code : BMCI-201

M.Code : 72462

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

1. Find value of a, b, c and d from equation

$$\begin{bmatrix} a-b & 2x-c \\ 2a-b & 3c+d \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 0 & 13 \end{bmatrix}$$

2. If $A = \begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \end{bmatrix}$ $B = \begin{bmatrix} -2 & -1 & 0 \\ 5 & 4 & 3 \end{bmatrix}$ Find A – B

3. Find Mean

x :	3	4	7	9	2	12	15

4. Find M.D from mean

x :	38	70	48	40	42	55	63	46	54	44

5. Differentiate $y = x \sin x$

6. Differentiate $y = \frac{1}{ax+b}$

7. Integrate $\int x^2 \cos x\,dx$

8. Integrate $\int \frac{x^3 - 5x^2 + 4}{x^2}\,dx$

9. Construct a 3 × 4 matrix, whose elements are aij = 2i – j

10. Write difference between simple interest and compound interest.

SECTION–B

11. Find the inverse of matrix $\begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & -1 \\ 3 & -2 & 2 \end{bmatrix}$.

12. Find standard deviation

x:	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
f :	20	24	32	28	20	16	34	10	16

13. Differentiate $y = \frac{x\tan x}{\sec x + \tan x}$

14. Integrate $\int \frac{x^2}{x^2 + 2x + 4}\,dx$

15. Find maxima and minima of sec x + log$\cos^2$x.

SECTION-C

16. Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by using

a) Trapezoidal rule

b) Simpson's $\frac{1}{3}$ rule

c) Simpson's $\frac{3}{8}$ rule

d) Weddle rule

17. a) Solve the following system of linear equation.

$$5x - y + 4z = 5$$

$$5x + 3y + 5z = 2$$

$$5x - 2y + 62 = -1$$

b) Differentiate $y = \frac{e^x \sin x}{1 \log x}$

18. a) Calculate the difference between simple interest and compound interest on Rs. 4000 in 2 years at 8% per annum compounded yearly.

b) Calculate amount and compound interest on Rs. 8000 in $2\frac{1}{2}$ years at 15% per annum.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.