PAPER ID-312057

Roll No:

MCA
(SEM III) THEORY EXAMINATION 2025-26
ELEMENTARY MATHEMATICS BRIDGE COURSE

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** **02 x 7 = 14**

Q no.	Question	CO	Level
a.	Define rank of a matrix.	1	K2
b. S	If A={1,2,3}, B={2,3,4}, find A∪B.		
c.	Find mean of: 2, 4, 6, 8, 10.		
d.	Define a group.		
e.	Differentiate $y = x^4 - 3x + 7$		
f.	Find LCM of 12 and 18.		
g.	If $f(x) = 2x+1$, find $f(3)$ and $f(-2)$.		

SECTION B

2. **Attempt any *three* of the following:** **07 x 3 = 21**

Q no.	Question	CO	Level
a.	Find the H.C.F. and L.C.M. of 180 and 252 using the Euclidean Algorithm.	1	K2
b.	Find the inverse of the matrix using elementary transformations: $\begin{bmatrix} 2 & 1 \\ 5 & 3 \end{bmatrix}$		
c.	Find maxima/minima of $y = x^3 - 3x^3 + 1$		
d.	For data: 10, 12, 15, 18, 20, 22, 25, 30 — compute mean, median, mode.		
e.	Differentiate: $y = x^3 - 4x^2 + 5x - 6$. Find the slope of the tangent at $x = 1$.		

SECTION C

3. **Attempt any *one* part of the following:** **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Explain addition and multiplication theorems of probability with examples.	1	K2
b.	Two dice are thrown. Find probability of: (i) sum 7, (ii) at least one 6,		

4. **Attempt any *one* part of the following:** **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Define arithmetic progression. Find 10th term of A.P.: 3, 7, 11, …	1	K2
b.	Expand $(2x-1)^6$ using Binomial theorem. Find coefficient of x^4.		

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5. **Attempt any *one* part of the following:**   **07 x 1 = 07**

Q no.	Question	CO	Level
a.	If A={1,2,3,4}, B={3,4,5,6}, C={4,5}: find (i) A∪B, (ii) A∩B, (iii) (A∪B)−C, (iv) A−B.	1	K2
b.	On the set A={1,2,3}, define a relation R= {(1,1),(2,2),(3,3),(1,2),(2,1)} Check whether R is reflexive, symmetric, and transitive.		

6. **Attempt any *one* part of the following:**   **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Evaluate: (i) ∫(3x2+4x+1) dx, (ii) ∫xeˣ dx,	1	K2
b.	State L'Hospital's Rule.Using L'Hospital's rule evaluate $\lim_{x\to 0}\left(\frac{sinx}{x}\right)$		

7. **Attempt any *one* part of the following:**   **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Find the eigen values of : $\begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$	1	K2
b.	Find the determinant of : $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$		