



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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End - Term Examinations - December 2025

Date: 08 - 12 - 2025

Time: 09:30am - 12:30pm

School: SOIS	Program: BCA, BCAD, BCAAIML	
Course Code : MAT1201	Course Name: Applied Mathematics	
Semester: I	Max Marks: 100	Weightage: 50%

CO - Levels	C01	C02	C03	C04	C05	C06
Marks	24	2	24	27	2	21

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x2M=20M

1.	Let $A = \{2, 4, 6, 8\}$, $B = \{4, 8\}$, find $A - B$.	2 Marks	L1	C01
2.	Let $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{2, 4, 6\}$, find A' .	2 Marks	L1	C01
3.	List two applications of set theory in computer science.	2 Marks	L1	C02
4.	Represent the AND gate symbolically.	2 Marks	L1	C03
5.	List the basic logic gates.	2 Marks	L1	C03
6.	What is the value of $\begin{vmatrix} 2 & 4 \\ 5 & -1 \end{vmatrix}$.	2 Marks	L1	C04
7.	List two applications of matrices in computer science.	2 Marks	L1	C05
8.	What is the derivative of $\sin 2x$.	2 Marks	L1	C06
9.	What is the value of $\lim_{x \rightarrow 3} \frac{x^2 - 7}{x + 2}$.	2 Marks	L1	C06
10.	Differentiate $\operatorname{cosec} x$ with respect to x .	2 Marks	L1	C06

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Let $A = \{1,3,5\}$, $B = \{1, 2, 3, 4\}$, $C = \{3,5,7,9\}$ then find $A \cup B$, $A \cap B$, $B \cup C$, $A - B$, $B - C$.	10 Marks	L3	C01
Or					
12.	a.	Let $A = \{4, 5, 6\}$, $B = \{2, 3, 4\}$, $C = \{3, 4, 5\}$, find $A \cap B$, $A \cup B$, $B \cup C$, $B - C$, $A - B$.	10 Marks	L3	C01
13.	a.	Prove $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ using Venn diagram.	10 Marks	L	C01
Or					
14.	a.	Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ with $A = \{1, 2\}$, $B = \{2, 3\}$, $C = \{1, 3\}$.	10 Marks	L	C01
15.	a.	Solve the following system of equations using Cramer's rule $2x - 3y + 5z = 11$ $3x + 2y - 4z = -5$ $x + y + 2z = 3$.	10 Marks	L3	C04
Or					
16.	a.	Solve the following system of equations using Cramer's rule $3x + 4y + z = 17$ $2x + 3y + 2z = 15$ $x + y = 4$.	10 Marks	L3	C04
17.	a.	Find the eigenvalue and the corresponding eigenvectors of the matrix $A = \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$.	15 Marks	L3	C04
Or					
18.	a.	Find the eigenvalue and the corresponding eigenvectors the matrix $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$.	15 Marks	L3	C04
19.	a.	Find the derivative of $\tan 3x + 2e^x \sin x + x^2 \cos 2x$.	10 Marks	L3	C06
	b.	Differentiate the following with respect to x (i) $\log 3x$ (ii) $2x^4 - 3x^2 + x - 5$	5 Marks	L3	C06
Or					
20.	a.	Find the derivative of $e^x \cos 3x + x^3 \log x - \sin 4x$.	10 Marks	L3	C06

	b.	Differentiate the following with respect to x (i) $\cos 4x$ (ii) $\sin(\log x)$.	5 Marks	L3	C06
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21.	a.	Show that $A \cdot (B + C) = (A \cdot B) + (A \cdot C)$ using truth table and hence draw the logic circuit diagram.	10 Marks	L3	C03
	b.	Prove De' Morgan's first law using truth table and hence draw the logic circuit diagram.	10 Marks	L3	C03

Or

22.	a.	Show that $(A + B) + C = A + (B + C)$ using truth table and hence draw the logic circuit diagram.	10 Marks	L3	C03
	b.	Prove De' Morgan's second law using truth table and hence draw the logic circuit diagram.	10 Marks	L3	C03