Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 09-10-2025 **Time:** 09.30am to 11.00am

School: SOIS/SOE	**Program:** BCA, BCAD, BCAAIML	
Course Code : MAT1201	**Course Name:** Applied Mathematics	
Semester: I	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks			-	-	-

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. 5Q x2M=10M

1	Write the set of vowels in English alphabet using set-builder form.	**2 Marks**	**L2**	**CO1**
2	If A = {1, 2, 3, 4}, find all proper subsets of A.	**2 Marks**	**L2**	**CO1**
3	Write any two applications of sets in computer science.	**2 Marks**	**L2**	**CO1**
4	If A and B are inputs of AND gate, find its output.	**2 Marks**	**L2**	**CO2**
5	State De Morgan's first law.	**2 Marks**	**L2**	**CO2**

Part B

Answer theQuestions. Total Marks 40M

6.	**a.**	If A = {x ∈ ℕ | x < 5}, B = {x ∈ ℕ | x is even and x ≤ 10}, find i). A∪B ii). A∩B iii). A - B iv). B - A v). AΔB	**10Marks**	**L3**	**CO 1**

		Or			
7.	**a.**	In a class of 50 students: 25 study Math (M) , 20 study Physics (P), 15 study Chemistry (C), 10 study Math and Physics, 8 study Physics and Chemistry, 5 study Math and Chemistry, 3 study all three subjects. Using Inclusion-Exclusion principle, find how many study only Math and how many study none of these subjects?	**10 Marks**	**L3**	**CO 1**

8.	**a.**	If A = {1, 2, 3}, B = {3, 4, 5}, U = {1, 2, 3, 4, 5, 6}, verify De Morgan's first and second law.	**10Marks**	**L3**	**CO 1**
		Or			
9.	**a.**	Prove De Morgan's first and second law using a Venn diagram.	**10 Marks**	**L3**	**CO 1**

10.	**a.**	i) Construct truth table for the expression $(A+\overline{B}).C$ (4 marks) ii) Show that A.(B+C)=(A.B)+(A.C) using truth table (6 marks)	**10 Marks**	**L3**	**CO 2**
		Or			
11.	**a.**	State and prove De Morgan's first and second law using truth table.	**10 Marks**	**L3**	**CO 2**

12.	**a.**	Using Boolean algebra techniques, simplify this expression: (A+B)(A+C)=A+BC and draw logic circuit of it.	**10 Marks**	**L3**	**CO 2**
		Or			
13.	**a.**	Using Boolean algebra techniques, simplify this expression: AB + A(B + C) + B(B + C) and draw logic circuit of it.	**10 Marks**	**L3**	**CO 3**