Roll No: | | | | | | | | | | | |

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 06/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: MAT1201 **Course Name:** Applied Mathematics

Semester: First Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	52	80	48

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define proper subset of a set. Give an example.	2	CO1	BT2
2	A = {x | x is an odd number < 10}, B = {1, 2, 3, 4}, find A ∩ B.	2	CO1	BT2
3	If A = {a, b, c}, B = {c, d, e}, find A – B and B – A.	2	CO1	BT2
4	Define Diagonal Matrix with example.	2	CO3	BT2
5	Define symmetric matrix. Give an example.	2	CO3	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	a. If A={2,4,6,8} and B={4,8,12,16}, Find A∪B, A∩B, A - B, B - A and AΔB. (5M) b. Verify A ∩ (B ∪ C) = (A ∩ B) ∪ (A ∩ C) with A = {1, 2}, B = {2, 3}, C = {1, 3}. (5M)	10	CO1	BT3
7	In a class of 50 students 25 study Math, 20 study Physics ,15 study Chemistry, 10 study Math and Physics, 8 study Physics and Chemistry, 5 study Math and Chemistry, 3 study all three subjects. Find the following i) How many study any one of the subjects? ii) How many study only Math? iii) How many study none of the subjects?	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Show that A.(B+C)=(A . B) +(A . C) using truth table and hence draw the logic circuit diagram.	10	CO2	BT3
9	A secure laboratory door opens only when: (i) A valid ID card is scanned (A = 1), and (ii) The correct PIN is entered (B = 1). (b) Obtain the Boolean expression for the system. (c) Draw the logic circuit using basic gates. (d) Construct the truth table. (e) Under what condition does the door open?	10	CO2	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Simplify the Boolean expressions a) $(A + B) \cdot (A + \bar{B})$ (5M) b) $AB + A\,(B + C) + B\,(B + C)$ (5M)	10	CO2	BT3
11	State and prove De Morgan's first and second law using truth table and logic gates.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	a. Find the values of a and b from the following equation (2M) $2\begin{bmatrix} a & 5 \\ 7 & b-3 \end{bmatrix} + \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 6 \\ 15 & 14 \end{bmatrix}$ b. Compute *AB* and *BA where* (8M) $A = \begin{bmatrix} 1 & 2 & -3 \\ 6 & 0 & 3 \\ 2 & -1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -1 & 3 \\ 3 & 3 & 10 \\ 2 & 0 & 3 \end{bmatrix}$	10	CO3	BT3
13	**a. If $\begin{bmatrix} 2 & 2 \\ 9 & 1 \end{bmatrix} = \begin{bmatrix} 2 & 2 \\ 9 & x+1 \end{bmatrix}$ then find x. (2M)** **b. Given $A = \begin{bmatrix} 4 & 2 & -1 \\ 3 & -7 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ -3 & 0 \\ -1 & 5 \end{bmatrix}$, defend $(AB)' = B'A'$ (8M)**	10	CO3	BT3