Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 29-10-2025 **Time:** 02.30pm to 04.00pm

School: SOCSE	**Program:** B.Tech(AIML)	
Course Code : CAI3402	**Course Name:** Optimization Techniques for Machine Learning	
Semester: VII	**Max Marks:50**	**Weightage:**25%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	26	24	-	-	-

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 x 2M=10M**

1	Define bivariate optimization with one example.	2 Marks	L1	CO1
2	What is meant by kernel in Support Vector Machines.	2 Marks	L1	CO1
3	Mention any two limitations of logistic regression.	2 Marks	L1	CO1
4	Define Learning Rate and explain its role in optimization	2 Marks	L1	CO2
5	Why is momentum used in gradient-based optimization?	2 Marks	L1	CO2

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	Explain the basics of optimization in bivariate and multivariate problems with examples.	**10 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	Describe how Least-Square Classification differs from logistic regression for binary classification.	**10 Marks**	**L2**	**CO1**

8.	**a.**	Describe the optimization function for Support Vector Machines	**10 Marks**	**L2**	**CO1**
		Or			
9.	**a.**	Describe coordinate descent with a suitable diagram.	**10 Marks**	**L2**	**CO1**

10.	**a.**	Compare different optimization techniques used in machine learning such as Gradient Descent, Newton, and RMSProp.	**10 Marks**	**L2**	**CO2**
		Or			
11.	**a.**	Discuss the Subgradient and Proximal Gradient Methods.	**10 Marks**	**L2**	**CO2**

12.	**a.**	Describe Computationally Efficient Variations of the Newton Method	**10 Marks**	**L2**	**CO2**
		Or			
13.	**a.**	Describe Momentum-Based Learning.	**10 Marks**	**L2**	**CO2**