Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Machine Learning for Business — **Semester: IV**

Program: BCA spl. AIML — **Time: 03 hrs.**

Course Code: CSAI2011 — **Max. Marks: 100**

Instructions: Attempt all questions. However, internal choices are mentioned if applicable

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define machine learning? Explain the difference between general programming and machine learning.	**4**	**CO1**
Q 2	Define overfitting and discuss in brief that how it is a concern in machine learning.	**4**	**CO2**
Q 3	Illustrate the usefullness of Maximum Likelihood to estimate the parameters of a statistical model?	**4**	**CO2**
Q 4	Illustrate Euclidean and Manhatten distance function using suitable example.	**4**	**CO3**
Q 5	Explain the difference between linear regression and logistic regression in tabular form.	**4**	**CO3**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Illustrate the difference between batch gradient descent and stochastic gradient descent approach of gradient descent algorithm.	**10**	**CO1**
Q 7	Explain the terms prior probability, likelihood, evidence, and posterior probability in the context of Bayes' theorem.	**10**	**CO2**
Q 8	Comprehend the term radial basis functions (RBFs), and illustrate how it is used in machine learning models?	**10**	**CO3**
Q 9	Suppose you are working on a binary classification problem for a spam email detection system. You have the following confusion matrix: - True Positives (TP): 450 - True Negatives (TN): 1200 - False Positives (FP): 30 - False Negatives (FN): 20 Calculate the following evaluation metrics based on this confusion matrix:	**10**	**CO2**

	a) Accuracy b) Precision c) Recall (Sensitivity) d) Specificity e) F1 score		
SECTION-C (2Q x 20M=40 Marks)			
Q 10	Discuss four different activation functions along with their graphical and mathematical significance.	**20**	**CO3**
Q 11	Explain the crossover operation in Genetic Algorithms, including its purpose, various strategies (e.g., one-point crossover, two-point crossover), and how it contributes to genetic diversity within the population. Or, Write short notes on the following: a) Multi layer feedforward neural network b) Baye's Theorem c) K-fold cross validation d) Distinguish Feature Selection and Feature Extraction	**20**	**CO4**