Seat No./Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– 1 • EXAMINATION – SUMMER - 2024

Subject Code:3710216 **Date: 27 Jun 2024**

Subject Name:Machine Learning

Time:02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define machine learning. What are the important objectives of Machine Learning? What are the basic design issues and approaches to Machine Learning?	**07**
	(b)	Differentiate between Linear regression and Logistic regression using appropriate example.	**07**
Q.2	**(a)**	Explain the concept of Bayes theorem with example.	**07**
	(b)	Define the term Gain and Entropy. How is it used to build the Decision tree in algorithm? Illustrate using an example.	**07**
		OR	
	(b)	Explain CART with suitable example.	**07**
Q.3	**(a)**	What do you mean by "Curse of Dimensionality"? Explain Principal Component Analysis (PCA) in brief.	**07**
	(b)	Explain K-means clustering with example.	**07**
		OR	
Q.3	**(a)**	What are the weaknesses of PCA? How it can be overcome by kernel PCA?	**07**
	(b)	Explain Gaussian Mixture Model.	**07**
Q.4	**(a)**	Enlist the evaluation parameter for regression algorithm and explain in brief.	**07**
	(b)	Explain Brute force MAP hypothesis learner. What is Minimum Description Length (MDL) principle?	**07**
		OR	
Q.4	**(a)**	Enlist the evaluation parameter for classification algorithm and explain in brief.	**07**
	(b)	Differentiate Bagging and Boosting in brief with example.	**07**
Q.5	**(a)**	What is the role of activation function in deep learning? How it improves the performance of algorithm? Explain it with any example.	**07**
	(b)	Explain different types of Neural Networks used in machine learning.	**07**
		OR	
Q.5	**(a)**	Explain in brief a Probably Approximately Correct (PAC) Learning model in Machine Learning	**07**
	(b)	How reinforcement learning differs from supervised machine learning? Explain it in brief.	**07**

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