GUJARAT TECHNOLOGICAL UNIVERSITY
B.VOC- SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code:21160201   **Date:08-05-2025**

Subject Name: Introduction to AI & ML

Time:10:30 AM TO 12:30 PM   **Total Marks:50**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	What is predicate logic? How it can be used for knowledge representation.	**05**
	(b)	Give difference between propositional logic and predicate logic.	**05**
Q.2	**(a)**	Explain supervised machine learning with an example.	**05**
	(b)	Explain Support vector machine (SVM) Algorithm.	**05**
		OR	
	(b)	Explain Decision tree classification algorithm.	**05**
Q.3	**(a)**	What is a cost function? How it can be used to minimize error.	**05**
	(b)	Write a simple python code for linear regression.	**05**
		OR	
Q.3	**(a)**	What is regression? Explain Linear regression in detail.	**05**
	(b)	Perform linear regression on this dataset. Use Y=aX+b for a single variable. Here, Y is a predictable variable and X is an independent variable. Find sales in the 7th week.	**05**

X(Week)	Y(Sales)
1	1.2
2	2.3
3	3.4
4	1.8
5	2.2

			Marks
Q.4	**(a)**	Explain Difference between linear regression and logistic regression.	**05**
	(b)	Explain logistic regression with an example.	**05**
		OR	
Q.4	**(a)**	What are the different problems that occur in machine learning during the training phase? Explain it in detail.	**05**
	(b)	Explain regularization technique.	**05**
Q.5	**(a)**	Explain the difference between supervised and unsupervised learning.	**05**
	(b)	Explain types of clustering in detail.	**05**
		OR	
Q.5	**(a)**	What are clustering algorithms, and what is their primary objective in data analysis?	**05**
	(b)	How does the K-Means cluster algorithm work, and what are its advantages and disadvantages?	**05**

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