Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII EXAMINATION – WINTER 2025

Subject Code:3171114 Date:20-11-2025

Subject Name:Introduction of Machine learning

Time:10:30 AM TO 01:00 PM Total Marks:70

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)**	Enlist different applications of machine learning.	**03**
	(b)	Explain the process of k-fold Cross Validation in brief.	**04**
	(c)	How Dimensionality reduction is achieved by PCA.	**07**
Q.2	**(a)**	Give reasons for overfitting.	**03**
	(b)	What is Naive Bayes classifier? Explain various application of Naive Bayes classifier.	**04**
	(c)	How learning is achieved using supervised learning algorithm.	**07**
		OR	
	(c)	Explain basic Decision Tree Learning Algorithm.	**07**
Q.3	**(a)**	Differentiate between dimensionality reduction and feature selection.	**03**
	(b)	Give advantages and disadvantages of K – means Clustering algorithm.	**04**
	(c)	Compare SVM and Neural Networks.	**07**
		OR	
Q.3	**(a)**	Enlist limitations of Bayes classifier.	**03**
	(b)	Differentiate between Clustering and Classification.	**04**
	(c)	Write any three key properties of SVM. Enlist any two applications of SVM and write any two limitations of SVM.	**07**
Q.4	**(a)**	Write advantages of Neural Network.	**03**
	(b)	Compare ReLu and Soft Max activation functions.	**04**
	(c)	How error reduction achieved in neural network using back propagation prove it using necessary equation.	**07**
		OR	
Q.4	**(a)**	State two types of computational learning models.	**03**
	(b)	Differentiate between weights and Hyper parameter.	**04**
	(c)	Explain Recurrent Neural Network with its architecture.	**07**
Q.5	**(a)**	Explain Variance reduction and Bias reduction in the context of Ensemble Method.	**03**
	(b)	Bagging and Boosting improve decision. justify the statement.	**04**
	(c)	Explain Vapnik- Chervonenkis (VC) dimension in detail.	**07**
		OR	
Q.5	**(a)**	What is bootstrap aggregation?	**03**
	(b)	Differentiate between linear regression and logistic regression.	**04**
	(c)	Explain AdaBoost algorithm in detail with its advantages and disadvantages.	**07**

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