GUJARAT TECHNOLOGICAL UNIVERSITY

MCA – SEMESTER III- EXAMINATION –WINTER-2024

Subject Code:639402　　　　　　　　　　　**Date: 20/11/2024**

Subject Name: 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. Use of simple calculators and non-programmable scientific calculators are permitted.

Q.1	**(a)**	**Answer following:**	**03**
		1. Define human learning.	
		2. Weather forecasting is _____ task. (Regression/Classification)	
		3. Define ROC.	
	(b)	Discuss the use of histogram in effective visualization of attributes with example.	**04**
	(c)	Explain types of data supported by machine learning.	**07**
Q.2	**(a)**	Write short note on bootstrap sampling.	**04**
	(b)	Explain under-fitting and over-fitting in machine learning model.	**03**
	(c)	Define feature construction. Discuss the need of feature construction with an example.	**07**
		OR	
	(c)	Discuss the measures of feature relevance and redundancy.	**07**
Q.3	**(a)**	Explain data quality and data remediation in detail.	**07**
	(b)	Write down the limitations of holdout method. Explain k-fold cross validation method.	**07**
		OR	
Q.3	**(a)**	Discuss bagging and boosting in detail.	**07**
	(b)	Explain feature selection process in detail. List out the feature selection approaches.	**07**
Q.4	**(a)**	Differentiate supervised learning and unsupervised learning.	**07**
	(b)	Explain decision tree algorithm with its applications, strengths and weaknesses.	**07**
		OR	
Q.4	**(a)**	List out the classification learning steps. Explain in detail.	**07**
	(b)	Define regression analysis. Discuss the assumptions made in regression analysis.	**07**
Q.5	**(a)**	**Write short note on:**	**07**
		1. Maximum Margin Hyperplane　　　　2.DBSCAN	
	(b)	Explain logistic regression in detail.	**07**
		OR	
Q.5	**(a)**	Write and discuss apriori algorithm for association rule learning.	**07**
	(b)	Discuss various partition based clustering techniques in detail.	**07**

****