Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA INTEGRATED– SEMESTER VII- EXAMINATION –WINTER-2023

Subject Code:4470601 **Date: 02/12/2023**

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)** Explain the following terms: - 1. Define machine learning. 2. Full form of LOOCV is _____. 3. Information gain is the expected _____ of entropy. 4. What is Kappa Value ? 5. What is Dendogram ? 6. Clustering model is a Supervised model. (T/F) 7. Image recognition is an application of machine learning. (T/F)	**07**
	(b) What is Machine Learning? List advantages and limitations of the Machine Learning	**07**
Q.2	**(a)** What is machine learning? Explain the different types of machine learning?	**07**
	(b) Explain the decision tree algorithm in detail.	**07**
	OR	
	(b) Explain qualitative and quantitative data in details.	**07**
Q.3	**(a)** Describe the structure of an artificial neuron. How is it similar to a biological neuron?	**07**
	(b) Write a note on Bayes Theorem.	**07**
	OR	
Q.3	**(a)** What is BAYESIAN belief network? Explain with example	**07**
	(b) Write a note on 1. Concept learning 2. Artificial Neural Network (ANN).	**07**
Q.4	**(a)** Discuss K-nearest Neighbor algorithm in detail	**07**
	(b) Explain Naïve Bayes Classifier with example.	**07**
	OR	
Q.4	**(a)** Explain overfitting and underfitting in context of machine learning models. What are the major causes of it?	**07**
	(b) Explain feature construction in detail with example.	**07**
Q.5	**(a)** Explain k-means and k-medoids with a neat diagram.	**07**
	(b) Explain linear regression model in detail with example.	**07**
	OR	
Q.5	**(a)** Discuss the SVM model in detail with different scenarios.	**07**
	(b) Explain the Apriori algorithm for association rule learning with example.	**07**

****