Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA INTEGRATED– SEMESTER VII- EXAMINATION –SUMMER-2022

Subject Code: 4470601 Date: 01/06/2022

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)**	1. Which symbol is used to represent the concept or function to be learned? 2. <x,c(x)> represents _____ in machine learning. 3. Clustering model is a Supervised model. (T/F) 4. Define machine learning. 5. The most specific possible hypothesis is denoted by _____. 6. Information gain is the expected _____ of entropy. 7. Image recognition is an application of machine learning. (T/F)	**07**
	(b)	Explain the steps of machine learning in detail.	**07**
Q.2	**(a)**	What is General-to-Specific Ordering? Explain how is this concept used in Find-S algorithm?	**07**
	(b)	What is decision tree? When to consider decision tree? With respect to decision tree describe how to decide which attribute should be selected first?	**07**
		OR	
	(b)	Describe inductive bias and overfitting in decision tree learning.	**07**
Q.3	**(a)**	Define ANN. Describe perceptron and perceptron training rule in detail.	**07**
	(b)	Explain Naive Bayes classifier with example.	**07**
		OR	
Q.3	**(a)**	What do you mean by gradient descent? Derive the gradient descent rule.	**07**
	(b)	What is the use of Bayes theorem? Explain MAP hypothesis and ML hypothesis with example.	**07**
Q.4	**(a)**	What is Probably Approximately Correct framework (PAC)? Explain in detail.	**07**
	(b)	How the k-Nearest Neighbour Learning works? Explain.	**07**
		OR	
Q.4	**(a)**	Explain VC dimension and mistake bound model of learning.	**07**
	(b)	What is Case –Based Reasoning (CBR)? Explain with an example.	**07**
Q.5	**(a)**	Differentiate propositional rules and first-order rules with suitable examples.	**07**
	(b)	Explain the PROLOG-EBG algorithm with example.	**07**
		OR	
Q.5	**(a)**	Discuss the similarities and differences of FOIL and FOCL algorithms.	**07**
	(b)	What is Reinforcement learning? Explain how it works.	**07**

****