

Enrolment No. /Seat No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA INTEGRATED– SEMESTER VII- EXAMINATION –SUMMER-2024

Subject Code: 4470601

Date: 09/05/2024

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.
4. Use of simple calculators and non-programmable scientific calculators are permitted.

- Q.1** (a) Answer all the questions below. **07**
1. Give two examples of applications of ML in speech recognition. [1]
2. Define version space. [1]
3. Differentiate training data set and testing data set. [2]
4. Write the Bayes' theorem in probabilistic terms. [1]
5. How the instance based learning methods (IBL) works? Explain. [2]
(b) Explain step by step process of machine learning with respect to any example of your choice. **07**
- Q.2** (a) What is concept learning? How Find-S is used in concept learning? **07**
(b) What is Information Gain (IG)? How is it used in selecting the best attribute in a decision tree? Explain with an example. **07**
- OR**
- (b) What is over-fitting in decision trees? How to avoid it? Explain. **07**
- Q.3** (a) Discuss Back propagation algorithm in detail. **07**
(b) Differentiate Gradient descent and Stochastic gradient descent. Write the Gradient Descent algorithm. **07**
- OR**
- Q.3** (a) What do you mean by perceptron? Explain the perceptron training rule for learning the weights. **07**
(b) What is VC dimension? How it is used? Explain. **07**
- Q.4** (a) What is Probably Approximately Correct framework (PAC)? Explain in detail. **07**
(b) Explain Bayesian Belief Network using an example. **07**
- OR**
- Q.4** (a) Explain K- Nearest Neighbor Learning algorithm. **07**
(b) Explain Naive Bayes classification algorithm. **07**
- Q.5** (a) What is the difference between propositional and first-order logic. Write the sequential covering algorithm. **07**
(b) Explain Explanation based learning with help of PROLOG-EBG algorithm. **07**
- OR**
- Q.5** (a) Explain First-order Inductive Learner (FOIL) algorithm. **07**
(b) Briefly write about the Reinforcement learning and MDP model. **07**
