

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA INTEGRATED – SEMESTER VII- EXAMINATION –WINTER-2024

Subject Code: 4470601

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) What is Machine Learning? List advantages and limitations of the Machine Learning. **07**
- (b) Explain the following terms: **07**
1. FOCL
 2. ANN
 3. Hypothesis
 4. Training data set
 5. Testing data set
 6. linear regression
 7. for Bayes theorem $P(h|D) = \underline{\hspace{2cm}}$
- Q.2** (a) Define Machine Learning and Learning Problems. What is a well-defined learning? problem? Explain it with an example. **07**
- (b) Explain qualitative and quantitative data in details. **07**
- OR**
- (b) Explain Bayes theorem in detail. **07**
- Q.3** (a) What is Neural Network Representation? Explain with example. **07**
- (b) Explain feature construction in detail with example. **07**
- OR**
- Q.3** (a) Compare supervised, unsupervised and reinforcement algorithm with suitable example. **07**
- (b) What is BAYESIAN belief network? Explain with example. **07**
- Q.4** (a) Discuss K-nearest Neighbor algorithm in detail. **07**
- (b) Discuss the decision tree algorithm in detail. **07**
- OR**
- Q.4** (a) Discuss the SVM model in detail with different scenarios. **07**
- (b) Discuss Backpropagation algorithm in detail. **07**
- Q.5** (a) What is reinforcement learning? What is the purpose of reward in this kind of learning? **07**
- (b) Discuss the application areas of machine learning algorithms. **07**
- OR**
- Q.5** (a) Explain First Order Combined Learner (FOCL) algorithm with example. **07**
- (b) Explain the Apriori algorithm for association rule learning with example. **07**