

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA INTEGRATED– SEMESTER IX- EXAMINATION –WINTER-2022**

**Subject Code: 4470601****Date: 02/01/2023****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) What is Machine Learning? List advantages and limitations of the Machine Learning **07**
- (b) Describe the structure of an artificial neuron. How is it similar to a biological neuron? **07**
- Q.2** (a) What is model in terms of machine learning? How can you train a model? **07**
- (b) What is decision tree ? Explain various issues in the Decision Tree Learning **07**
- OR**
- (b) Explain Bayes theorem in detail **07**
- Q.3** (a) Explain the Apriori algorithm for association rule learning with example. **07**
- (b) Compare supervised, unsupervised and reinforcement algorithm with suitable example. **07**
- OR**
- Q.3** (a) What is machine learning? Explain the different types of machine learning? **07**
- (b) Explain overfitting and underfitting in context of machine learning models. **07**
- What are the major causes of it?
- Q.4** (a) Explain k-means and k-mediods with a neat diagram. **07**
- (b) Discuss the SVM model in detail with different scenarios. **07**
- OR**
- Q.4** (a) When we can consider Neural Networks? Give an examples of an application using Neural Networks. **07**
- (b) Explain in details, the different components of a box plot? When will the lower whisker be longer than the upper whisker? How can outlier be detected using box plot? **07**
- Q.5** (a) Discuss K-nearest Neighbor algorithm in detail. **07**
- (b) Explain linear regression model in detail with example **07**
- OR**
- Q.5** (a) How sequential covering algorithm works? Explain with suitable example **07**
- (b) What are Bayesian Belief networks? Where are they used? **07**

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