

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA INTEGRATED– SEMESTER - VII EXAMINATION –WINTER-2021**

**Subject Code: 4470601****Date: 29/11/2021****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.

- Q.1 (a)** Explain the following terms: - **07**
1. Histogram
  2. LOOCV
  3. Kappa value
  4. Elbow method
  5. Dendogram
  6. Neural Network
  7. Sigmoid function
- (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.2 (a)** What is machine learning? Explain the different types of machine learning? **07**
- (b)** Explain qualitative and quantitative data in details. **07**
- OR**
- (b)** Describe the structure of an artificial neuron. How is it similar to a biological neuron? **07**
- Q.3 (a)** What is model in terms of machine learning? How can you train a model? **07**
- (b)** What is feature selection? What are the different approaches of feature selection? **07**
- OR**
- Q.3 (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.4 (a)** Explain Naïve Bayes algorithm with suitable example. **07**
- (b)** What is KNN algorithm? Explain advantages and dis-advantages of KNN algorithm **07**
- OR**
- Q.4 (a)** What are Bayesian Belief networks? Where are they used? **07**
- (b)** Discuss the decision tree algorithm in detail. **07**
- Q.5 (a)** Explain linear regression model in detail with example. **07**
- (b)** Explain k-means and k-medoids with a neat diagram **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**

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