

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA INTEGRATED– SEMESTER VII- EXAMINATION –WINTER-2023**

**Subject Code:2678601****Date: 02/12/2023****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) Answer the following. 03**
1. Define bootstrap sampling.
  2. What is deep learning?
  3. List the feature selection approaches.
- (b) Discuss the concept of over fitting and under fitting in machine learning. 04**
- (c) Differentiate supervised learning, unsupervised learning and reinforcement learning. 07**
- Q.2 (a) Discuss human learning vs machine learning. 03**
- (b) Discuss hierarchical clustering in brief. 04**
- (c) Explain K-fold cross validation method in detail. 07**
- OR**
- (c) List the feature extraction algorithms. Discuss PCA in brief. 07**
- Q.3 (a) Discuss the concept of Bayes' theorem in brief. 07**
- (b) Explain k-Nearest Neighbor algorithm in brief. 07**
- OR**
- Q.3 (a) Briefly explain measures of feature relevance and feature redundancy. 07**
- (b) What are outliers? Discuss the ways to handle the outliers and missing values. 07**
- Q.4 (a) Explain Logistic Regression in brief. 07**
- (b) Write short note on K-Means clustering algorithm. 07**
- OR**
- Q.4 (a) Briefly explain classification learning steps. 07**
- (b) Define regression analysis. Write down the assumptions in regression analysis. 07**
- Q.5 (a) List the types of Activation functions. Explain any three. 07**
- (b) Explain Apriori algorithm for association rule with appropriate example. 07**
- OR**
- Q.5 (a) What is a biological neuron? Write a short note on multi layer feed forward network of ANN. 07**
- (b) Discuss the steps of backpropagation algorithm. 07**

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