

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March 2025
MACHINE LEARNING WITH PYTHON

(Open Elective)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks

UNIT-I

1. a) Differentiate between Supervised, Unsupervised, and Reinforcement Learning with suitable examples? [7M]
b) Illustrate NumPy, SciPy, matplotlib, and scikit-learn with their importance in Machine Learning? [7M]

(OR)

2. a) Explain with real-world applications of Machine Learning in different domains. [7M]
b) Evaluate simple linear regression application of Machine Learning using Python? [7M]

UNIT-II

3. a) Explain the k-Nearest Neighbors(k-NN) algorithm with its working mechanism. [7M]
b) Describe Decision Trees and Ensemble Methods with suitable diagrams? [7M]

(OR)

4. a) Explain different types of supervised learning with examples. [7M]
b) Explain about importance of Uncertainty Estimation in Classifiers. [7M]

UNIT-III

5. a) Explain different types of unsupervised learning techniques. [7M]
b) Compare Agglomerative Clustering and DBSCAN. Mention their advantages and limitations. [7M]

(OR)

6. a) Demonstrate the significance of Dimensionality Reduction in Machine Learning? [7M]
b) Discuss various techniques used in Preprocessing and Scaling for Unsupervised Learning. [7M]

UNIT-IV

7. a) Explain Binning and Discretization techniques in data preprocessing. [7M]
b) Illustrate the concept of interactions and polynomials in feature engineering? [7M]

(OR)

8. a) Discuss the role of Linear Models and Decision Trees in feature selection. [7M]
b) Explain the concept of parameter selection with preprocessing using an example. [7M]

UNIT-V

9. a) Explain different types of data that can be represented as strings in ML applications. [7M]
b) Discuss different approaches to testing production systems in Machine Learning. [7M]

(OR)

10. a) Describe the Sentiment Analysis process for Movie Reviews using Machine Learning? [7M]
b) Explain the working of Ranking and Recommender Systems in real-world applications. [7M]
