

(i) Printed Pages : 2

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(ii) Questions : 9

Sub. Code : 

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Exam. Code : 

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**Bachelor of Computer Application (FYUP) 3<sup>rd</sup> Semester  
(2125)**

**INTRODUCTION TO MACHINE LEARNING**

**Paper : NBCA304**

**Time Allowed : Three Hours]**

**[Maximum Marks : 90**

**Note :—** Attempt **FIVE** questions in all, selecting **ONE** question each from Units-I, II, III and IV. Unit-V is compulsory.

**UNIT-I**

1. Define Machine Learning. How is it different from traditional programming? Explain the different types of learning paradigms. 18
2. What are the challenges in Machine Learning? Explain the process of designing a machine learning system. 18

**UNIT-II**

3. What is the need for data preprocessing in Machine Learning? Explain different methods for handling missing data, noisy data, and inconsistent data. 18
4. Describe the concept of feature selection. How does normalization and feature scaling improve model performance? Explain with suitable examples. 18

### UNIT-III

5. Explain the working of the Decision Tree algorithm. How is a decision tree constructed and pruned? 18
6. What is a Support Vector Machine (SVM)? Explain its basic concept and working principle. Compare SVM with k-nearest neighbor classifier. 18

### UNIT-IV

7. Differentiate between K-means and DBSCAN clustering algorithms. Explain how DBSCAN overcomes the limitations of K-means. 18
8. Define Deep Learning. Explain the architecture and components of a Convolutional Neural Network (CNN). How is it different from a traditional neural network? 18

### UNIT-V

9. Attempt any **SIX** of the following (3 marks each):
  - (a) Define training data and test data.
  - (b) Mention two issues in Machine Learning.
  - (c) What is reinforcement learning?
  - (d) Define normalization.
  - (e) What is the purpose of classification evaluation metrics?
  - (f) State any two limitations of K-Means.
  - (g) What is backpropagation?
  - (h) Define Recurrent Neural Networks (RNNs). 3×6=18