

Roll.No.

25UCSCT5E07

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

B.Sc.Computer Science - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - V

25UCSCT5E07 - Machine Learning

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Explain the major challenges in Machine Learning applications.
2. Differentiate between supervised and unsupervised learning with examples.
3. Describe the steps involved in the data preprocessing pipeline.
4. Compare bagging and boosting ensemble methods.
5. Illustrate the working of Decision Tree and Random Forest algorithms.
6. Elucidate the role of kernel function in Support Vector Machine.
7. Present the concept of Principal Component Analysis (PCA).
8. Explain the process of training and backpropagation in a Multilayer Perceptron.

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Analyze how the choice of learning algorithms affects classification performance with suitable examples.
10. Design a data pipeline for a machine learning project using preprocessing, model training, and evaluation stages.
11. Implement and discuss an unsupervised learning approach for customer segmentation.
12. Compare various optimization algorithms used in neural networks and justify suitable use cases.
13. Critically evaluate supervised vs. unsupervised learning trade-offs for real-world tasks.
