

# Satyug Darshan Institute of Engineering & Technology, Faridabad

## Department of Computer Science & Engineering

Academic year 2025-26

|                                        |                                   |
|----------------------------------------|-----------------------------------|
| <b>Programme:</b> BCA-DS               | <b>Year &amp; Semester :</b> 5th  |
| <b>Course Name:</b> Machine Learning-I | <b>Course Code:</b> BCA-DS-23-305 |
| <b>Prepared by:</b> Ms. Anjali Mehta   |                                   |

### Unit I

#### Short answer questions

| Q.N. | Question                                       | KL |
|------|------------------------------------------------|----|
| 1    | Define Machine Learning.                       | K1 |
| 2    | List applications of Machine Learning.         | K1 |
| 3    | Differentiate between AI and Machine Learning. | K2 |
| 4    | What is supervised learning?                   | K1 |
| 5    | What is unsupervised learning?                 | K1 |

#### Long answer questions

| Q.N. | Question                                                            | KL |
|------|---------------------------------------------------------------------|----|
| 1    | Explain different types of Machine Learning with suitable examples. | K3 |
| 2    | Discuss the Machine Learning workflow in detail.                    | K3 |
| 3    | Explain challenges faced in Machine Learning systems.               | K3 |
| 4    | Compare supervised, unsupervised, and reinforcement learning.       | K4 |
| 5    | Discuss real-life applications of Machine Learning in detail.       | K4 |

### Unit II

#### Short answer questions

| Q.N. | Question                                | KL |
|------|-----------------------------------------|----|
| 1    | What is data preprocessing?             | K1 |
| 2    | Define missing data.                    | K1 |
| 3    | What is data normalization?             | K1 |
| 4    | What is feature scaling?                | K1 |
| 5    | Define exploratory data analysis (EDA). | K2 |

#### Long answer questions

| Q.N. | Question                                                   | KL |
|------|------------------------------------------------------------|----|
| 1    | Explain various data preprocessing techniques.             | K3 |
| 2    | Discuss handling of missing and noisy data.                | K3 |
| 3    | Explain data normalization and standardization techniques. | K3 |
| 4    | Describe exploratory data analysis with suitable examples. | K4 |
| 5    | Explain feature selection and feature extraction methods.  | K4 |

# Satyug Darshan Institute of Engineering & Technology, Faridabad

## Unit III

### Short answer questions

| Q.N. | Question                           | KL |
|------|------------------------------------|----|
| 1    | Define regression.                 | K1 |
| 2    | What is classification?            | K1 |
| 3    | Define linear regression.          | K1 |
| 4    | What is k-Nearest Neighbor (k-NN)? | K1 |
| 5    | Define decision tree.              | K1 |

### Long answer questions

| Q.N. | Question                                                            | KL |
|------|---------------------------------------------------------------------|----|
| 1    | Explain simple and multiple linear regression.                      | K3 |
| 2    | Describe logistic regression with example.                          | K3 |
| 3    | Explain k-NN algorithm with advantages and disadvantages.           | K4 |
| 4    | Discuss construction of decision trees using ID3 or CART algorithm. | K4 |
| 5    | Compare regression and classification techniques.                   | K4 |

## Unit IV

### Short answer questions

| Q.N. | Question                        | KL |
|------|---------------------------------|----|
| 1    | Define clustering.              | K1 |
| 2    | What is K-means clustering?     | K1 |
| 3    | Define hierarchical clustering. | K1 |
| 4    | What is overfitting?            | K2 |
| 5    | Define cross-validation.        | K2 |

### Long answer questions

| Q.N. | Question                                                         | KL |
|------|------------------------------------------------------------------|----|
| 1    | Explain K-means clustering algorithm in detail.                  | K3 |
| 2    | Describe hierarchical clustering methods.                        | K3 |
| 3    | Explain performance evaluation metrics for classification models | K4 |
| 4    | Discuss bias–variance trade-off in Machine Learning.             | K4 |
| 5    | Explain methods to avoid overfitting and underfitting.           | K4 |