

Roll No.																				
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**BENGALURU**  
**School of Information and Science**  
**Mid - Term Examinations - November 2024**

**Semester:** III

**Date:** 07-11-2024

**Course Code:** CSA3002

**Time:** 02.00pm to 03.30pm

**Course Name:** Machine Learning Algorithms

**Max Marks:** 50

**Program:** BCA/BSD

**Weightage:** 25%

**Instructions:**

*(i) Read all questions carefully and answer accordingly.*

*(ii) Do not write anything on the question paper other than roll number.*

---

**Part A**

**Answer ALL the Questions. Each question carries 2marks.**

**5Qx2M=10M**

1	Name any 2 common techniques used for Data transformation.	2 Marks	L1	CO1
2	What is a sigmoid function?	2 Marks	L1	CO1
3	List the types of regression.	2 Marks	L1	CO1
4	List any 2 benefits of Dimensionality reduction with PCA.	2 Marks	L1	CO2
5	List 3 main types of ensemble methods.	2 Marks	L1	CO2

---

**Part B**

**Answer ALL Questions. Each question carries 10 marks.**

**4QX10M=40M**

6	a. Define supervised learning?	2 Marks	L1	CO1
	b. Explain the steps in PCA computation?	3 Marks	L2	CO1
	c. Elaborate on the concept of ensemble methods and why they are used to improve machine learning models.	5 Marks	L3	CO1

**Or**

- |          |   |         |    |     |
|----------|---|---------|----|-----|
| <b>7</b> | <b>a.</b> Define unsupervised learning?   | 2 Marks | L1 | CO1 |
|          | <b>b.</b> Explain Random Forest algorithm and how it employs bagging with decision trees. | 3 Marks | L2 | CO1 |
|          | <b>c.</b> Write code for creating a Linear Regression model.                              | 5 Marks | L3 | CO1 |

- |          |  |         |    |     |
|----------|--|---------|----|-----|
| <b>8</b> | <b>a.</b> Define binning method?                               | 2 Marks | L1 | CO1 |
|          | <b>b.</b> Outline the major tasks in data preprocessing?       | 3 Marks | L2 | CO1 |
|          | <b>c.</b> Write code for creating a Logistic Regression model. | 5 Marks | L3 | CO1 |

**Or**

- |          |  |         |    |     |
|----------|--|---------|----|-----|
| <b>9</b> | <b>a.</b> List two methods to handle noisy data?   | 2 Marks | L1 | CO1 |
|          | <b>b.</b> Explain how to handle missing data?  | 3 Marks | L2 | CO1 |
|          | <b>c.</b> Write code to split the data x, y using train_test_split function. Split the data with 80% for training and 20% for testing. | 5 Marks | L3 | CO1 |

- |           |   |         |    |     |
|-----------|---|---------|----|-----|
| <b>10</b> | <b>a.</b> Why is feature selection important?   | 2 Marks | L1 | CO2 |
|           | <b>b.</b> Explain two different filter methods in feature selection techniques?             | 3 Marks | L2 | CO2 |
|           | <b>c.</b> Write code using SimpleImputer class to fill the missing values using mean value. | 5 Marks | L3 | CO2 |

**Or**

- |           |  |         |    |     |
|-----------|--|---------|----|-----|
| <b>11</b> | <b>a.</b> What are the three common categories of feature selection techniques?  | 2 Marks | L1 | CO2 |
|           | <b>b.</b> Explain two different wrapper methods in feature selection techniques? | 3 Marks | L2 | CO2 |
|           | <b>c.</b> Write down the code for min-max scaling.                               | 5 Marks | L3 | CO2 |

- |           |   |         |    |     |
|-----------|---|---------|----|-----|
| <b>12</b> | <b>a.</b> Define oversampling and undersampling?                                  | 2 Marks | L1 | CO2 |
|           | <b>b.</b> Explain two different embedded methods in feature selection techniques? | 3 Marks | L2 | CO2 |

c. Write code for Recursive Feature Elimination. 5 Marks L3 C02

**Or**

a. List the different types of sampling techniques. 2 Marks L1 C02

13 b. Explain any two sampling techniques. 3 Marks L2 C02

c. Write down the code for Z-score Normalization. 5 Marks L3 C02