

## **Assignment: Supervised Learning – Classification and Regression**

**Course Code:** CS3151

**Topic:** Supervised Learning

**CLO:** CLO3 – Analyze artificial intelligence techniques for practical problem-solving

**Total Marks:** 20

**Submission Deadline:** 28-06-2025

### **Question 1: Understanding Supervised Learning (5 marks)**

- a. Define supervised learning. What are its key characteristics?
- b. Explain the difference between classification and regression with at least one real-world example of each.

### **Question 2: Classification (7 marks)**

- a. Describe the general process of building a classification model.
- b. Explain how logistic regression work for classification tasks. Illustrate your answer using a simple dataset of your choice.
- c. What are common performance metrics used to evaluate classification models? Define any two.

### **Question 3: Regression (5 marks)**

- a. Explain the concept of regression in supervised learning. How is it different from classification?
- b. Describe linear regression and its equation. What do the coefficients represent?
- c. Give one example where regression is more appropriate than classification and explain why.

### **Question 4: Comparative Analysis (3 marks)**

Compare and contrast classification and regression in terms of:

- Output variable
- Algorithm examples
- Evaluation metrics