Q1. [7] Explain the working of the k-Nearest Neighbor (k-NN) algorithm for classification and regression [CO3][L2]
Q2. [8] What are the advantages and disadvantages of k-NN algorithm [CO3][L1]
Q3. [10] Explain the concept of lazy learning and instance-based learning with respect to k-NN [CO3][L2]
Q4. [7] Discuss how distance metrics are used in k-NN. Why is Euclidean distance commonly used [CO3][L3]
Q5. [8] How is the value of 'K' selected in k-NN? What happens if K is too small or too large [CO3][L4]
Q6. [10] Differentiate between uniform weighting and distance-based weighting in weighted k-NN [CO3][L2]
Q7. [7] What are the applications and limitations of weighted k-NN [CO3][L2]
Q8. [8] Explain the Nearest Centroid Classifier. How is it different from k-NN [CO3][L2]
Q9. [10] Describe the steps involved in classifying a test instance using the Nearest Centroid Classifier [CO3][L3]
Q10. [7] What is Locally Weighted Regression (LWR)? Explain how it works using nearest neighbors [CO3][L2]
Q11. [8] List the advantages and limitations of Locally Weighted Regression [CO3][L1]
Q13. [7] Define regression analysis. What are its objectives and applications [CO3][L2]
Q14. [10] Explain the difference between simple linear regression and multiple linear regression [CO3][L2]
Q15. [7] What are the assumptions of linear regression? Briefly explain each [CO3][L2]
Q16. [8] Write the mathematical form of a linear regression model and explain its components [CO3][L2]
Q17. [10] Discuss the advantages and limitations of linear regression [CO3][L1]
Q18. [7] What is multiple linear regression? When is it used [CO3][L1]
Q19. [8] What are the assumptions of multiple linear regression [CO3][L2]
Q20. [10] Explain the concept of multicollinearity. How does it affect regression models [CO3][L3]
Q21. [7] Define polynomial regression. When is it preferred over linear regression [CO3][L2]
Q22. [8] What are the advantages and limitations of polynomial regression [CO3][L1]
Q23. [10] What is decision tree learning? Explain its structure with terms like root node, branches, and leaf nodes [CO1][L1]
Q24. [7] Describe the process of building a decision tree from training data [CO1][L3]
Q25. [8] List and explain the advantages and disadvantages of decision trees [CO1][L1]
Q26. [10] What is the difference between univariate and multivariate decision trees [CO1][L1]
Q27. [7] Explain the ID3 algorithm. What splitting criterion does it use [CO1][L2]
Q28. [8] How does the C4.5 algorithm differ from ID3? Mention its key features [CO1][L2]

Q29. [10] Describe the CART algorithm. What is the GINI index [CO1][L2]
Q30. [7] Compare the ID3, C4.5, and CART algorithms in terms of features, advantages, and limitations [CO1][L2]