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School of Computing Science and Engineering

Master of Technology in Computer Science and Engineering

Mid Term Examination - May 2024

Duration : 90 Minutes

Max Marks : 50

Sem II - R1PV202B - MachineLearning*General Instructions**Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Distinguish the difference between simple and multiple linear regression. K2 (2)
- 2) Describe the role of neural networks in machine learning and give an example of a task they can be used for. K1 (3)
- 3) Given a dataset with one independent variable (X) and one dependent variable (Y), calculate the slope and intercept of the simple linear regression line. K2 (4)
- 4) How would you use a confusion matrix to compare the performance of multiple classifiers on the same dataset? K2 (6)
- 5) Apply logistic regression with L1 regularization (LASSO) to select the most important features for classification. K3 (6)
- 6) Implement logistic regression using gradient descent optimization and tune the learning rate to achieve convergence. K3 (9)
- 7) Explain the concept of KNN and how it works in classification tasks. K4 (8)
- 8) Describe the process of building a decision tree, including attribute selection measures such as entropy, or information gain. K4 (12)

OR

- Discuss techniques for handling overfitting in decision trees, such as pruning, setting minimum samples per leaf, or using ensemble methods like random forests. K4 (12)