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Enroll No.....

Class Roll No.....

Second Mid Semester Examination, JUNE 2024
Programming Elective - Branch: CSE/AIML Semester: V

Time 1:30 Hrs

Max. Marks 20

- Q.1** a) What is Clustering in Machine Learning? Explain K-Means and DBSCAN algorithms.
b) What is Dimensionality Reduction. Explain PCA with example.

OR

- a) What is Anomaly Detection? Explain statistical and ML-based methods.
b) Explain Association Rule Mining with Apriori and FP-Growth algorithm. **(CO3 7 marks)**

- Q.2** a) Explain Ensemble Learning. Compare Bagging and Boosting with examples.
b) What is Random Forest and how does it improve prediction accuracy?

OR

(CO4 7 marks)

- a) What is Hyperparameter Tuning? Explain Grid Search and Random Search with examples.
b) What are underfitting and Overfitting? How can Cross-Validation help mitigate them?

- Q.3.a)** Explain the architecture of a multilayer perceptron (MLP). What are activation functions?
b) What is Backpropagation? Explain the training process using Gradient Descent.

OR

(CO5 6 marks)

- a) What is Reinforcement Learning? Explain Markov Decision Process (MDP) and Q-Learning.
b) Write a short note on Fairness and Explainability in ML. Why are they important?

