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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE) (Sem.-6)

MACHINE LEARNING

Subject Code : BTCS618-18

M.Code : 79257

Date of Examination : 12-06-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION - A

1. Write briefly :

- a) How machine learning differs from traditional programming approaches?
- b) Describe feature selection and its importance. List at least two feature selection methods.
- c) Discuss the concept of data normalization and its impact on model training and performance.
- d) What is regression analysis in the context of machine learning, and how does it differ from classification?
- e) Define support vector machines (SYMs) and discuss their role in classification in brief.
- f) What is logistic regression, and how is it used for binary classification?
- g) Define the terms "feature vector" and "feature space" in the context of classification.
- h) Explain the purpose of a decision boundary in a classification problem.
- i) Define the terms "class" and "label" in classification tasks and explain their significance.
- j) Define sensitivity.

SECTION - B

2. Analyze the impact of feature selection on classification performance. Provide a step-by-step explanation of how feature selection can improve model efficiency and discuss a practical example where feature selection would be crucial.
3. Explain the Apriori algorithm, its core principles and how it contributes to association rule mining.
4. Explain Naïve algorithm with its role and applications.
5. Explain the potential benefits of using association rule learning in recommendation systems and its impact on user experience and business performance.
6. Explain the various performance measures used in regression.

SECTION - C

7. Describe the function of a split algorithm in the construction of a decision tree. How does it identify the optimal feature and split point for data partitioning?
8. Provide a detailed explanation of multiple and polynomial linear regression models, including their respective algorithms.
9. Explain multiple and polynomial linear regression models in detail with its algorithm.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.