Roll No. | | | | | | | | | | | | **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 : 20-06-2023

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) Discuss various issues in machine learning.

b) Write a short note on Data Cleaning

c) What is data reduction?

d) What is the need of data pre-processing?

e) Describe briefly how is the performance of regression models evaluated?

f) Discuss various applications of clustering.

g) Differentiate between mutation and elitism in genetic algorithms.

h) What is the role of selection in the process of genetic algorithm optimization?

i) Differentiate between precision and recall.

j) How does the acceptable error impact the accuracy of a correlation analysis using R-square?

SECTION-B

2. Compare and contrast the advantages and disadvantages of decision trees and random forests in machine learning.

3. Explain the concept of Support Vector Machine (SVM) and its application in binary classification problems. Discuss the advantages and limitations of SVM compared to other classification algorithms.

4. Explain the basic concepts of genetic algorithms, including gene representation and fitness function. Discuss the importance of genetic operators such as selection, crossover, and mutation in the optimization process.

5. Describe the Naive algorithm for finding association rules and explain the importance of support and confidence in this algorithm.

6. Explain the concepts of Multiple Linear Regression and Polynomial Regression, including the assumptions and limitations of these regression models.

SECTION-C

7. Explain the importance of splitting a dataset into training and testing sets in machine learning. Describe the process of randomly splitting a dataset into training and testing sets and explain the potential issues with this approach.

8. Explain the concept of Reinforcement Learning (RL) and its application in machine learning. Discuss the difference between model-based and model-free RL approaches and explain when each approach is appropriate to use.

9. Explain the concept of Neural Networks and their applications in machine learning. Discuss common activation functions and explain the advantages and limitations of each function.