

Roll No.

Total No. of Pages : 02

Total No. of Questions : 9

B.Tech. (CSE) (Sem.-6)
MACHINE LEARNING
Subject Code : BTCS618-18
M.Code : 79257
Date of Examination : 22-05-2024

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. Answer briefly :

- (a) Write a short note on well-posed learning problems.
- (b) What are the benefits associated with data preprocessing?
- (c) Write various applications of regression.
- (d) Explain the terms sensitivity and specificity.
- (e) In the context of tree induction algorithms, how do split algorithms based on information theory and Gini index vary from one another?
- (f) How are genes represented in genetic algorithms, and how is the effectiveness of various solutions assessed using the fitness function?
- (g) Discuss some key applications of association rules learning.
- (h) How do hierarchical and density-based clustering approaches differ from each other in terms of their approach to clustering data points?
- (i) Differentiate between supervised and unsupervised learning approaches.
- (j) Explain the term "data integration".

SECTION-B

2. What is feature scaling? Differentiate between standardisation and normalisation and discuss scenarios where one is preferred over the other?
3. Differentiate between 'regression' and 'classification' discussing various evaluation metrics associated with them.
4. What are decision trees? Explain with the help of an example how splitting of nodes is done using information theory and Gini Index.
5. What benefits and limitations do neural networks have over Conventional Machine Learning Models?
6. What is Machine Learning? Differentiate between supervised and unsupervised learning with the help of examples.

SECTION-C

7. What are the key applications of clustering, and how do the different types of clustering algorithms, such as partitioned, hierarchical, and density-based methods, differ in their approach and performance?
8. Explain the basic architecture of a neural network and how it processes input data to produce predictions. Also, explain how back propagation is used to modify the weights of the network during training as well as the purpose of activation functions in neural network computation?
9. Describe the process of building a regression model, including the steps involved in data preparation, model selection, and model evaluation.

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.