21CSC4C12L

Sl. No.

M.Sc. IV Semester Degree Examination, Sept./Oct. - 2024
COMPUTER SCIENCE
Machine Learning
(NEP)

Time : 3 Hours   Maximum Marks : 70

Note : *Answer **any five** of the following questions with **Question No.1 Compulsory**, each question carries **equal** marks.*

1. (a) What is the purpose of sampling in the context of training and testing machine learning models ? **7**

(b) Explain Skewness, Kurtosis and its types. **7**

2. (a) Define Machine Learning. What potential issues or challenges can arise when implementing machine learning models ? **7**

(b) What objectives does predictive data analytics seek to achieve ? **7**

3. (a) Explain the concept of Error Metrics in Machine learning. How do these metrics differ in terms of calculation and implications when evaluating regression models ? **7**

(b) Discuss how SVMs find the optimal hyperplane for classification, the role of support vectors. Provide an example to illustrate your explanation. **7**

4. (a) Consider a dataset with the following class labels : **7**

6 instances of Class A

4 instances of Class B

Calculate the entropy of this dataset.

(b) Discuss the role of impurity metrics in decision tree algorithms. **7**

5. (a) What is the importance of data normalization in machine learning ? **7**

(b) Define what the feature space is in the context of machine learning ? **7**

6. (a) Illustrate the key characteristics of Machine Learning. **7**

(b) Compare Polynomial and Logistical Regression. **7**

7. (a) Explain the types of tree pruning techniques commonly used in decision trees. **7**

(b) How to predict continuous targets in KNN ? **7**

8. Write short notes on the following : **5+5+4**

(a) Distance Metrics

(b) Data Visualization

(c) Gradient Descent

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