

**FACULTY OF SCIENCE**

B.Sc. (CBCS) II-Year (IV-Semester) Regular & Backlog Examinations, June/July-2023

Data Science-IV  
(Machine Learning)

Time: 3 Hours

Max Marks: 80

**SECTION-A**

(4x5=20 Marks)

Answer any Four questions from the following

1. What is Data Generating Distributions?
2. What is Bio-Inspired Learning?
3. What are the Basis functions of Neural Networks?
4. What is Minimum Spanning Tree?
5. Write few lines about Real World Applications of Machine Learning.
6. What is Convex Surrogate Loss Functions?

**SECTION-B**

(4x15=60 Marks)

Answer all the following questions

7. (a) Explain Limits of Learning in Inductive Bias, Underfitting and Overfitting and Separation of training and Test data.  
(OR)  
(b) Explain k-Means Clustering and High Dimensions.
8. (a) Explain Debugging learning Algorithms and Bias Variance Tradeoff.  
(OR)  
(b) Discuss about Evaluating Model Performance, Cross Validation and Hypothesis Testing and Statistical Significance.
9. (a) Explain Back Propagation Algorithm and Bio-inspired Multilayer networks.  
(OR)  
(b) Explain classification by Density Estimation and Statistical Estimation.
10. (a) Explain Agglomerative Algorithms and Divisive Clustering.  
(OR)  
(b) Explain Association Rules and Apriori Algorithm.