CBCS SCHEME

USN | | | | | | | | | | |

21AD62

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Data Science and its Application

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. What is Data Science? Explain Matplotlib with bar chart, line chart and scatter plot. **(10 Marks)**

b. Explain about linear algebra. **(10 Marks)**

OR

2 a. Explain probability with conditional probability and Baye's theorem. **(10 Marks)**

b. Explain continuous distributions and normal distribution with code. **(10 Marks)**

Module-2

3 a. Explain statistical Hypothesis testing with example : flipping a coin. **(10 Marks)**

b. What is gradient descent? Explain the idea behind gradient descent and estimating the gradient. **(10 Marks)**

OR

4 a. What are the different ways of reading files? Explain. **(10 Marks)**

b. Explain how will you explore your data with one, two and many dimensions. **(10 Marks)**

Module-3

5 a. Define machine learning and explain with code:
i) Over-fitting
ii) Under fitting
iii) Correctness. **(10 Marks)**

b. What is K-nearest Neigbors? Explain the model with example : Favorite Languages with code. **(10 Marks)**

OR

6 a. Explain Naïve Bayes with implementation and testing our model with code. **(10 Marks)**

b. Explain the model of simple linear regression and using gradient descent with code. **(10 Marks)**

Module-4

7 a. What is a decision tree? Explain creating a decision tree and the entropy of a partition. **(10 Marks)**

b. What is Neural networks? Explain :
i) Feed – Forward Neural Networks
ii) Back propagation. **(10 Marks)**

OR

8 a. Explain deep learning with tensor and Neural Networks as a sequence of Layers. **(10 Marks)**

b. What is clustering? Explain the idea and clustering model with example : clustering colors. **(10 Marks)**

Module-5

9 a. What is Natural language processing? Explain :
   i) Word clouds
   ii) n-Gram language models
   iii) Grammars. **(10 Marks)**

   b. Explain Eigenvector centrality with matrix multiplication and centrality with code. **(10 Marks)**

OR

10 a. What is recurrent neural networks with example using a character –level RNN, explain with code. **(10 Marks)**

   b. Explain recommender systems with user – based collaborative filtering with code. **(10 Marks)**

* * * * *