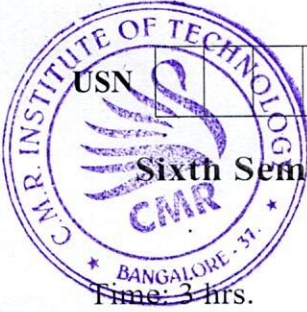


CBCS SCHEME



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: (10 Marks)
 - i) Over-fitting
 - ii) Under fitting
 - iii) Correctness.
- b. What is K-nearest Neighbors? 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 : (10 Marks)
 - i) Feed – Forward Neural Networks
 - ii) Back propagation.

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)

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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)

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