CBCS SCHEME

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21AD62

Sixth Semester B.E. Degree Examination, June/July 2024
Data Science & its Applications

Time: 3 hrs. Max. Marks: 100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Describe dispersion and variance and write the python code to compute the variance. **(07 Marks)**

b. Discuss random variables with an example in detail. **(07 Marks)**

c. Explain standard deviation and interquartile range and write python code to compute standard deviation and interquartile range. **(06 Marks)**

OR

2 a. Explain Bar Chart, Line Chart and Histogram with help of diagram. **(07 Marks)**

b. Discuss Conditional probability with an example in detail. **(07 Marks)**

c. Explain Correlation and describe the impact of outlier on correlation. **(06 Marks)**

Module-2

3 a. Explain P-Values with an example. **(07 Marks)**

b. Write Python program to plot Line chart by assuming your own data and explain the various attributes of line chart. **(06 Marks)**

c. Describe A/B test with an example. **(07 Marks)**

OR

4 a. A certain disease affects 1% of the population. A test for the disease has a 99% sensitivity (true positive rate) and a 99% specificity (true negative rate). If a person tests positive, what is the probability that they actually have the disease? **(07 Marks)**

b. Describe how data can be manipulated by considering an example. **(06 Marks)**

c. Explain cleaning and munging of data with an example. **(07 Marks)**

Module-3

5 a. Explain support vector machines in detail. **(07 Marks)**

b. Discuss digression in detail. **(06 Marks)**

c. Discuss the need for fitting the model in multiple regressions. **(07 Marks)**

OR

6 a. Discuss Goodness of Fit in detail. **(06 Marks)**

b. Write Python snippet for Accuracy, Precision, Recall and F_1 score. **(07 Marks)**

c. Explain Feature Extraction and Feature selection. **(07 Marks)**

Module-4

7 a. Discuss perceptron neural network in detail. **(10 Marks)**

b. Explain layer abstraction in deep learning. **(10 Marks)**

OR

8 a. Write python program to compute loss and optimization in deep learning. **(10 Marks)**

b. Explain feed forward neural network in detail with a neat diagram. **(10 Marks)**

Module-5

9 a. Describe n-Gram language models in detail. **(10 Marks)**

b. Explain Eigen Vector centrality in detail. **(10 Marks)**

OR

10 a. Explain item based collaborative filtering. **(10 Marks)**

b. Discuss matrix factorization in detail. **(10 Marks)**

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