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.

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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