CBCS SCHEME

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

20SCS21

Second Semester M.Tech. Degree Examination, July/August 2022
Data Science

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define Data Science. Explain the Venn diagram of Data Science. (08 Marks)
b. Explain the Data Science Profile. (06 Marks)
c. Explain the work of the Data Scientist in academia and industry. (06 Marks)

OR

2 a. What is Datafication? Explain with examples. (06 Marks)
b. Explain the following concepts with examples:
(i) Statistical inference
(ii) Population
(iii) Samples
(iv) Types of data (10 Marks)
c. Explain the Probability Distribution. (04 Marks)

Module-2

3 a. Explain Exploratory Data Analysis with example. (10 Marks)
b. Briefly explain Data Science Process with a neat diagram. (10 Marks)

OR

4 a. Explain the Linear Regression technique in brief. (10 Marks)
b. Explain K-Nearest Neighbors Algorithm. (10 Marks)

Module-3

5 a. Why Linear Regression and K-NN are poor choices for filtering spam? Discuss. (10 Marks)
b. Explain the Naïve Bayes Algorithm for Filtering Spam with example. (10 Marks)

OR

6 a. Describe scraping the web with API's and other tools. (10 Marks)
b. Explain Laplace Smoothing. (05 Marks)
c. Compare Naïve Bayes Algorithm with K-NN algorithm. (05 Marks)

Module-4

7 a. Explain and construct Decision Tree with an example. (10 Marks)
b. Write the short notes on:
(i) Feature selection criteria
(ii) Random Forest
(iii) The three Primary Methods of Regression
(iv) The Kaggle model (10 Marks)

OR

8 a. Explain Singular Value Decomposition. **(05 Marks)**

b. Describe the problems with the Nearest Neighbor in recommendation system. **(05 Marks)**

c. Explain Principal Component Analysis. **(10 Marks)**

Module-5

9 a. What is a Social Network? List and explain the characteristics of Social Network. **(05 Marks)**

b. Explain the Social Network Clustering Methods. **(05 Marks)**

c. Explain Girvan-Newman algorithm with example. **(10 Marks)**

OR

10 a. Explain the Neighborhood properties in graphs. **(10 Marks)**

b. Find the Normalized cuts for the following below graph. Fig.Q10. **(05 Marks)**

c. Find the Laplacian Matrix for the following below graph G, Fig.Q10. **(05 Marks)**

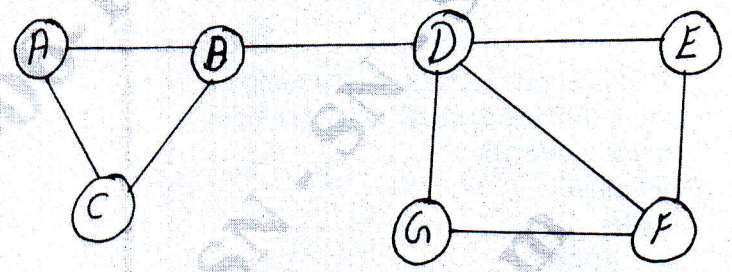

Fig.Q10

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