

**Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024**

## Data Visualization

Time: 3 hrs.

Max. Marks: 100

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

## Module-1

- 1 a. Explain Data Visualization. Mention the importance of Data Visualization. Explain what are the advantages of pandas. (10 Marks)
- b. Explain what is Numpy. Explain advantages of Numpy with an example. (10 Marks)

**OR**

- 2 a. Write a program to perform Numpy operations : i) Creating an array ii) Indexing  
iii) Splitting iv) Iterating v) Filtering vi) Slicing. (10 Marks)  
b. Explain Data Wrangling. Demonstrate with an example. (10 Marks)

## Module-2

- 3 a. Explain the advantages of Relation plots. Draw Bubble plot. (10 Marks)  
b. Write a program code to generate a scatter plot to visualize the correlation between hours of study and exam scores for a group of students. (10 Marks)

**OR**

- 4 a. Define Matplotlib. Mention the advantages of Matplotlib. Plot a horizontal line in Matplotlib. (10 Marks)
- b. Explain Histogram. Plot a pie chart set a title, label and legend. (10 Marks)

### Module-3

- 5 a. Define Seaborn. Mention the advantages of Seaborn. What is major difference between Seaborn and Matplotlib. (10 Marks)
- b. Write a code to demonstrate seaborn figure style and removing axes spines. (10 Marks)

**OR**

- 6 a. Explain Categorical and sequential color pallet and also mention the difference between categorical and sequential color pallet. Mention the advantages of color pallet. (10 Marks)
- b. Describe how to create a grid of subplots in seaborn. (10 Marks)

## Module-4

- 7 a. Explain the advantages of Geoplotlib. Explain design principles of geoplotlib. (10 Marks)  
b. Justify how Geoplotlib is easy to create basic geographic visualization. What insights can be gained from visualizing different layers of geographic data? (10 Marks)

**OR**

- 8 a. Create a simple map using Geoplotlib and mark the locations of major cities in a Country. (10 Marks)
- b. Define Bokeh. How does Bokeh simplify the process of creating interactive line plots? (10 Marks)

**Module-5**

- 9 a. Apply Urllib .request to fetch the content of a web page, print the first 100 characters of the HTML. (10 Marks)  
b. Explain Web Scrapping. What is the role of Beautiful soup in parsing HTML? (10 Marks)

**OR**

- 10 a. Find and print all the hyperlinks [anchor tags] from a webpage using Beautiful soup. (10 Marks)  
b. Write a code to read binary file using urllib. (10 Marks)

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