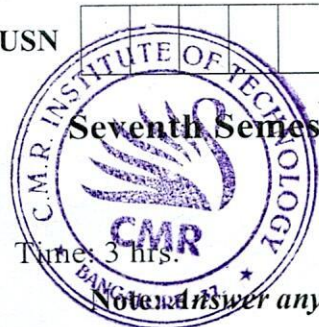


# CBCS SCHEME

21AD71

USN



Seventh Semester B.E./B.Tech. Degree Examination, June/July 2025

## Data Visualization

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. With a neat diagram, explain the steps involved in the data wrangling process. (10 Marks)
- b. Explain the measures of central tendency and measures of dispersion with example. (10 Marks)

OR

- 2 a. Explain the following operations of Numpy by developing python program for individual operation.  
i) Splitting ii) Sorting iii) Combining iv) Reshaping. (10 Marks)
- b. Explain the following operations of pandas by developing python program for individual operation. (10 Marks)

### Module-2

- 3 a. Explain the various types comparison and composition plot with example. (10 Marks)
- b. Develop python code for the following :  
i) Creating and closing figures  
ii) Plotting a graph with custom ticks and specific tick labels  
iii) Displaying and saving figures. (10 Marks)

OR

- 4 a. Explain with python code to plot bar chart, pie chart, stacked bar chart, stacked area chart and histogram. (10 Marks)
- b. Develop python code to create layouts using the followings :  
i) Subplots with and without tight layout  
ii) Subplots with and without a shared x and y axis. (10 Marks)

### Module-3

- 5 a. Explain the following concepts of seaborn used for controlling figure Aesthetics.  
i) Seaborn figure styles  
ii) Removing Axes spines  
iii) Contexts (10 Marks)
- b. With python code explain the following color palettes of seaborn.  
i) Categorical color palettes  
ii) Diverging color palettes. (10 Marks)

OR

- 6 a. With python code explain the following interesting plots in seaborn.  
i) Bar plots  
ii) Kernel density estimation  
iii) Visualizing pair wise relationships. (10 Marks)
- b. What are the features and advantages of seaborn. (10 Marks)

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### Module-4

- 7 a. With a neat diagram explain the conceptual architecture of geoplotlib. (06 Marks)
- b. Explain the design principles of geoplotlib with example. (08 Marks)
- c. With python code explain any two plots used for geospatial visualizations. (06 Marks)

OR

- 8 a. Draw the block diagram for concept of Bokeh and explain the individual block. (10 Marks)
- b. Explain tile providers and custom layers for geospatial data visualization. (10 Marks)

### Module-5

- 9 a. Develop the python code for the following :  
i) To retrieve an image over HTTP  
ii) To retrieve web pages with Urllib. (10 Marks)
- b. Illustrate the concepts of parsing HTML using regular expression and BeautifulSoup. (10 Marks)

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- 10 a. Explain the working of HTTP protocol with example and socket connection diagram. (10 Marks)
- b. Illustrate the concepts of parsing JSON and parsing XML with python code. (10 Marks)

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