



CBCS SCHEME

21AD71

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Seventh Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

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. Describe the process of data wrangling. Why is it crucial before creating visualization? (07 Marks)
- b. Distinguish between quantitative and qualitative data with examples. (07 Marks)
- c. Describe the difference between slicing and splitting in Numpy. (06 Marks)

OR

- 2 a. A teacher has recorded the following scores from her class of 10 students on a math test : 92, 85, 78, 88, 95, 67, 84, 91, 76 and 89. Calculate the mean, median and mode of the test scores. Discuss which measure of central tendency might best represent the overall performance of the class and why. (07 Marks)
- b. Explain slicing in pandas. How would you select a subset of rows and columns from a Data Frame? (07 Marks)
- c. Define filtering in Numpy, and how would you use it to find all elements in an array that are greater than a specific value? (06 Marks)

Module-2

- 3 a. Describe how to create a heat map in python using Seaborn library. (07 Marks)
- b. Differentiate Density plot and Histogram along with diagram. (06 Marks)
- c. Describe a situation where a radar chart would be an effective visualization. (07 Marks)

OR

- 4 a. Describe a choropleth map and give an example of its application. (07 Marks)
- b. Design a comprehensive plot using multiple plot types (eg. Line, bar) to showcase data insights. (06 Marks)
- c. Evaluate the role of pandas data frames in simplifying data handling with Matplotlib. (07 Marks)

Module-3

- 5 a. Compare Seaborn and Matplotlib discussing specific features that make seaborn suitable for complex visualizations. (07 Marks)
- b. Determine the impact of removing spines on the interpretability of plots for presentation purposes. (06 Marks)
- c. Explain how adjusting context affects the appearance of labels and plot elements. (07 Marks)

OR

- 6 a. Compare the KDE plot to a histogram for visualizing distributions in different contexts. (07 Marks)
- b. Explain how violin plots provide insights into data distribution compared to box plots. (07 Marks)
- c. Compare the effectiveness of the "deep" and "muted" palettes in conveying information for categorical data. (06 Marks)

Module-4

- 7 a. Compare Geoplotlib with other geospatial libraries like Folium or Matplotlib's Basemap, identifying unique advantages. (10 Marks)
- b. Explain how widgets add interactivity to Bokeh visualizations. (10 Marks)

OR

- 8 a. Explain how mapping mail data can reveal patterns in distribution and service areas. (10 Marks)
- b. Compare different visualization techniques for displaying network data. (10 Marks)

Module-5

- 9 a. Compare the HTTP methods GET and POST, explaining when each is used. (07 Marks)
- b. Design a sample HTTP GET request in python using the requests library to access a public API. (07 Marks)
- c. Discuss when it is appropriate to use RegEx for HTML parsing. (06 Marks)

OR

- 10 a. Develop a program that writes data into an XML file based on user input. (07 Marks)
- b. Compare different XML parsing libraries in python, such as element tree and minidom. (06 Marks)
- c. Compare RESTful and SOAP-based web services in terms of ease of use and scalability. (07 Marks)

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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.