

Enrollment No.: _____

Date: 19/05/2026

Subject Code: BETIT16327

Semester: 6

Subject Name: Data Analysis and Visualization

Total Marks: 100

Time: 10:30AM To 01:30PM

Instructions:

1. Question No. 1 is Compulsory.
2. Make Suitable Assumptions wherever necessary.
3. Figures to the right indicate full marks.

	Marks
Q.1 (a) Short note: Explain the concept and objectives of Exploratory Data Analysis.	05
(b) Short note: Explain the use of histograms and box plots in EDA.	05
(c) Discuss methods for detecting and treating outliers. (Detailed answer)	10
Q.2 (a) Short note: Explain various data collection methods used in data analysis.	05
(b) Short note: Describe measures of central tendency with examples.	05
OR	
(b) Short note: Describe common data formats such as CSV, JSON, and XML.	05
(c) Explain different data distribution patterns. (Detailed answer)	10
OR	
(c) Differentiate between structured, semi-structured, and unstructured data. (Detailed answer)	10
Q.3 (a) Short note: Explain techniques for handling missing values in datasets.	05
(b) Short note: Explain hypothesis testing with suitable examples.	05
(c) Describe various outlier detection techniques. (Detailed answer)	10
OR	
(a) Short note: Describe Chi-square test and its applications.	05
(b) Short note: Explain K-Means clustering with an example.	05
(c) Explain interactive visualization using Plotly. (Detailed answer)	10
Q.4 (a) Short note: Discuss the Hadoop ecosystem including HDFS and MapReduce.	05
(b) Short note: Explain the use of scatter plots and heatmaps.	05

(c) Discuss the features of Dash and Bokeh for visualization. (Detailed answer) 10

OR

(a) Short note: Discuss visualization libraries such as Matplotlib and Seaborn. 05

(b) Short note: Explain ANOVA and its importance in statistical analysis. 05

(c) Discuss the Hadoop ecosystem including HDFS and MapReduce. (Detailed answer) 10

Q.5 (a) Short note: Explain the principles of effective data visualization. 05

(b) Short note: Discuss perception and encoding in visualization design. 05

(c) Discuss visualization libraries such as Matplotlib and Seaborn. (Detailed answer) 10

OR

(a) Short note: Describe how dashboards help communicate insights. 05

(b) Short note: Discuss geospatial visualization and GIS tools. 05

(c) Describe publishing dashboards in Tableau or Power BI. (Detailed answer) 10