

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER– VI EXAMINATION – SUMMER 2026****Subject Code:3161613****Date:26-05-2026****Subject Name:Data Analysis and Visualization****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Write importance of data analysis and visualization with example.	03
	(b) Describe the need for dimension reduction in data science. Also write its approaches.	04
	(c) Calculate Pearson correlation coefficient between age and salary for given samples. (24,\$27), (28,\$31), (35,\$28), (49,\$39), (58,\$57), (62,\$82), (63,\$68).	07
Q.2	(a) Describe descriptive statistics and inferential statistics.	03
	(b) What is probability distribution function (PDF)? Explain different types of PDFs.	04
	(c) Discuss time series analysis technique in brief.	07
	OR	
	(c) Define outliers. List outlier detection methods. Also describe any one method in details.	07
Q.3	(a) Explain how to categorize data using random forest algorithm.	03
	(b) What is cluster? Explain types of clustering methods.	04
	(c) Explain working of k-nearest neighbor (k-NN) algorithm with suitable example.	07
	OR	
Q.3	(a) Explain dependent and independent variable with example.	03
	(b) Compare clustering and classification.	04
	(c) What is regression? Discuss different types of regression methods.	07
Q.4	(a) Discuss web based applications for visualization design.	03
	(b) What is over fitting and under fitting regarding classification?	04
	(c) Explain data science for driving growth in E-commerce.	07
	OR	
Q.4	(a) Write objective of using gradient descent.	03
	(b) Describe steps of the process for creating data visualization.	04
	(c) Explain working of k-Means clustering algorithm with example.	07
Q.5	(a) Write a note on data visualization.	03
	(b) Explain principles of dashboard design for effective data visualization.	04
	(c) What is spatial data mapping? Describe different techniques available for spatial data mapping,	07
	OR	
Q.5	(a) Explain Comparative graphics for visualization in brief.	03

- (b)** Write a note on D3.JS **04**
- (c)** Write a note on Big three of Data Visualization: Data Storytelling, Data Showcasing and Data Art of Data Visualizations. **07**