Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3161613   **Date:10-07-2023**
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)**	Define cluster. List out algorithms for identifying clusters.	**03**
	(b)	Define classification. Differentiate cluster and classification.	**04**
	(c)	Explain data science for driving growth in E-commerce.	**07**
Q.2	**(a)**	Define: Inferential statistics, correlation and outliers.	**03**
	(b)	Explain reducing data dimensionality with linear algebra.	**04**
	(c)	Explain Linear, Logistic and Ordinary least squares (OLS) regression methods in brief.	**07**

OR

	(c)	Define Time Series Analysis. Discuss time series analysis techniques in brief.	**07**
Q.3	**(a)**	Discuss the ways to avoid overfitting in classification.	**03**
	(b)	Discuss Estimating clusters with kernel density estimation (KDE).	**04**
	(c)	Explain working of average nearest neighbor (ANN) algorithm with suitable example	**07**

OR

Q.3	**(a)**	Discuss model overgeneralization problem in classification.	**03**
	(b)	Discuss identifying clusters with Density-based spatial clustering of applications with noise (DBScan) neighborhood.	**04**
	(c)	Explain working of k-nearest neighbor (k-NN) algorithm with suitable example.	**07**
Q.4	**(a)**	List out six steps of process for creating data visualization.	**03**
	(b)	Define data graphic. Explain Comparative graphics is brief.	**04**
	(c)	Write a note on The Big three: Data Storytelling, Data Showcasing and Data Art of Data Visualizations	**07**

OR

Q.4	**(a)**	Choose appropriate Standard chart graphics Visualization Element: Bar chart, Line chart and Pie chart for Data Storytelling, Data Showcasing and Data Art of Data Visualizations.	**03**
	(b)	Discuss purpose of D3.js library of data visualizations.	**04**
	(c)	Discuss Brainstorm, Define the purpose of your visualization and Choose a functional design steps of Designing to Meet the Needs of Your Target Audience in brief.	**07**

Q.5 **(a)** List out open source web based application tools for visualization Design. **03**

(b) Explain Buffering and proximity functions to extract valuable information from your spatial dataset. **04**

(c) Discuss various points to design dashboard for data visualization. **07**

OR

Q.5 **(a)** Describes Less is more and Stay Current a set of best practices that are helpful when planning the details of your design in brief **03**

(b) Write a note on "Visualizing and collaborating with Plotly". **04**

(c) Explain analyzing spatial data with querying, overlay, and reclassification methods. **07**