

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3161613****Date:07-12-2023****Subject Name:Data Analysis and Visualization****Time:02:30 PM TO 05:00 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.

	<b>Marks</b>
<b>Q.1</b> (a) Define the following terms	<b>03</b>
(a) Descriptive Statistics                      (b) Inferential Statistics	
(b) What are outliers? Why it should be removed from the dataset before analysis?	<b>04</b>
(c) Calculate the correlation coefficient between given speed and acceleration. Speed-(46,52,53,54,59,62) Acceleration- (12,14,17,18,17,22)	<b>07</b>
<b>Q.2</b> (a) Explain importance of data analysis.	<b>03</b>
(b) What is time series analysis? Also give examples where time series analysis can be used.	<b>04</b>
(c) Discuss Random Forest Algorithm in details.	<b>07</b>
<b>OR</b>	
(c) Write the need of data dimensionality reduction. Also compare feature selection with feature extraction.	<b>07</b>
<b>Q.3</b> (a) What is cluster analysis? Write its usage.	<b>03</b>
(b) Describe distance measures used in data science.	<b>04</b>
(c) Discuss types of clustering.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Write a note on Big three of data visualization.	<b>03</b>
(b) Differentiate clustering with classification.	<b>04</b>
(c) Explain nearest neighbor algorithm with example.	<b>07</b>
<b>Q.4</b> (a) Define the terms (a) Dependent variable    (b) Independent Variable.	<b>03</b>
(b) Compare supervised and unsupervised learning.	<b>04</b>
(c) What is regression analysis? Discuss types of regression analysis techniques.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Describe characteristics of good clustering.	<b>03</b>
(b) Describe various graphs used for data visualization.	<b>04</b>
(c) Describe K-means clustering algorithm with example.	<b>07</b>
<b>Q.5</b> (a) Describe maps used for visualizing spatial data.	<b>03</b>
(b) Write a note on D3.js for data visualization.	<b>04</b>
(c) Analyze design principles for data visualization.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) Write short note on dashboard design.	<b>03</b>
(b) Explain context in data visualization in brief.	<b>04</b>

(c) Discuss applications of data science in E-commerce.

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