Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3154301 **Date: 02/06/2026**

Subject Name: Statistics and Exploratory Data Analysis

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.**

Q.1	**(a)**	Define statistical inference and its applications.	**03**
	(b)	Compare various measures for central tendency of data.	**04**
	(c)	Discuss various scales of measurements for data with simple examples.	**07**
Q.2	**(a)**	Define random variable and its types.	**03**
	(b)	Differentiate binomial probability distribution and Poisson probability distribution.	**04**
	(c)	Discuss how skewness and kurtosis be useful to get insights of data with simple examples.	**07**
		OR	
Q.2	**(c)**	Discuss how measures of dispersion be useful to get insights of data with simple examples.	**07**
Q.3	**(a)**	Conditional probability can be used to analyze the likelihood of a medical condition or outcome occurring given that certain symptoms, risk factors, or prior diagnoses are already present. True or False? Justify your answer.	**03**
	(b)	What is Autocorrelation? List its applications in data analysis.	**04**
	(c)	Explain how Pearson's correlation coefficient can be used to analyze the relationship between two variables. Illustrate your explanation with a simple example using assumed data and show the necessary calculations.	**07**
		OR	
Q.3	**(a)**	Permutations and Combinations can be used to analyze the number of possible groupings or orderings of products within sales data. True or False? Justify your answer.	**03**
	(b)	What is multiple regression? List its applications in data analysis.	**04**
	(c)	Explain how Simple linear regression can be used to analyse the relationship between two variables. Illustrate your explanation with a simple example using assumed data and show the necessary calculations.	**07**
Q.4	**(a)**	Compare any two methods of curve fitting.	**03**
	(b)	Explain temporal data and its applications.	**04**
	(c)	Discuss how data science pipeline can be applied to any real world application?	**07**
		OR	
Q.4	**(a)**	Compare any two statistical inference estimations.	**03**

	(b)	Explain spatial data and its applications.	**04**
	(c)	Discuss how exploratory data analysis and data visualization can be applied to any real world application?	**07**
Q.5	**(a)**	Compare null hypothesis and alternate hypothesis.	**03**
	(b)	How to analyse different errors during hypothesis testing?	**04**
	(c)	Explain chi-square test with a simple example.	**07**

OR

Q.5	**(a)**	Compare parametric Tests and Non-parametric Tests.	**03**
	(b)	How to analyse sampling error?	**04**
	(c)	Explain Z-test and T-test with simple examples.	**07**

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