Seat No. /Enrollment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA-SEMESTER-I-EXAMINATION-WINTER-2025

Subject Code: 4519207 **Date: 20/01/2026**
Subject Name: Business Statistics
Time: 10:30 AM TO 01:30 PM
Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of simple calculators and non-programmable scientific calculators are permitted.**

Q.1. **Explain the following terms.** **14**

a Ratio data
b Kurtosis
c Interquartile Range
d Two Tailed Test
e Type I error
f Mode
g Population and Sample

Q.2 (a) Explain different types of variables used in statistical analysis with examples. **07**

Q.2 (b) A mining company operates in two regions: Region A and Region B. The company estimates that 60% of its total production comes from Region A and 40% from Region B. Historically, 5% of the mineral mined in Region A is classified as low-grade, while in Region B, 10% of the mineral is low-grade. A sample of mineral is selected at random and is found to be low-grade. What is the probability that this mineral came from Region A? **07**

OR

Q.2 (b) The average monthly salary of employees in a software company follows a normal distribution with a mean of ₹50,000 and a standard deviation of ₹8,000. **07**

(a) What is the probability that a randomly selected employee earns more than ₹60,000 per month?
(b) What is the probability that a randomly selected employee earns between ₹40,000 and ₹70,000 per month?

Q.3 (a) Discuss various steps for testing of hypothesis. **07**

Q.3 (b) A study compares two teaching methods. The scores of students are as follows: **07**

	Group A	Group B
Sample Size	10	15
Mean Score	78	82
Standard Deviation	10	12

Assuming equal variances, perform an independent sample t-test (two-tailed) at a 0.05 significance level.

OR

Q.3 (a) A researcher is examining whether there is an association between the number of hours employees spend on training and their performance scores. The following data is collected from the employees: **07**

Hours of Training	10	12	18	14	25	21	27
Performance Score	84	91	95	92	101	97	103

Calculate the Pearson correlation coefficient for the data provided and evaluate the strength of association.

Q.3 (b) Explain the importance of graphical representation of data in business statistics. What is a Pareto chart, and how is it used in business statistics? **07**

Q.4 (a) A researcher wants to test if there is an association between Gender and Preferences. The following data was collected: **07**

Gender	Preference A	Preference B	Preference C
Male	122	230	210
Female	70	110	180

Perform a test of independence to determine if there is a significant association between gender and preference at a 0.05 significance level.

Q.4 (b) Why non-parametric tests are used instead of parametric tests. Give an overview of two non-parametric tests and describe the situations in which they are applied. **07**

OR

Q.4 (a) A company wants to analyze the relationship between advertising expenditure (in crores) and sales revenue (in crores). They collected the following data: **07**

Advertising Expenditure	2	3	5	7	8	4	6
Sales Revenue	8	12	20	28	32	18	25

Perform a simple linear regression analysis to determine the equation of the line that best fits the data.

Q.4 (b) A company is testing a new product and estimates that 30% of customers will prefer it based on a prior survey. They decide to conduct a test with a sample of 10 customers. Calculate the probability that exactly 4 customers out of the 10 will prefer the product. What is the probability that at least 3 customers will prefer the product? **07**

Q.5 India is one of the leading producers of various minerals, contributing significantly to the global market. Below is the data on mineral production (in thousand metric tons) from different states in India for the year 2023:

States	**Mineral Production (in thousand metric tons)**
State A	120
State B	150
State C	80
State D	90
State E	160

(a) Construct a Box and Whisker Plot. Is the distribution of the data skewed? **07**

(b) Calculate the mean and sample standard deviation for the data. **07**

OR

(a)	Compute the Pearson coefficient of skewness for the data.	**07**
(b)	Calculate the interquartile range and coefficient of variation for the data.	**07**

****