Seat No. /Enrollment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA-SEMESTER-I-EXAMINATION-SUMMER-2025

Subject Code: 4519207 **Date: 05/06/2025**

Subject Name: Business Statistics

Time: 02:30 PM TO 05:30 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. No.		Question Text and Description	Marks
Q.1		Answer the followings (a) Explain reverse conditional probability (b) Describe Hypothesis testing (c) Identify usage of Z test (d) Explain "Range" (e) If standard deviation for any data set is zero, what does it means? (f) Mention the concept of Ungrouped data (g) Explain "Continuous Probability Distribution"	**14**
Q.2	**(a)**	Elaborate the process of Hypothesis testing with suitable example	**07**
	(b)	Identify whether the following is Nominal, Ordinal, Interval or Ratio data. (1) Roll No. of students (2) Merit list prepared by ACPC for admission (3) Students marks in CMAT Examination (4) Percentage of student in CAT Examination (5) Exam seat no. (6) Mobile no. of student (7) Salary received by student during campus placement	**07**
		OR	
	(b)	It is known to Government of Gujarat that 35% of the Lions in the jungle of Gir suffers from habit of hunting Cows at villages. Also, 45% of them had hearted themselves by villagers during hunting of Cows. If a random sample of 50 Lions is considered for study, estimate (1) No. of Lions with the habit of hunting Cows at villages and (2) No. of Lions had hearted themselves by villagers during hunting of Cows.	**07**

Q.3 **(a)** A mobile battery manufacturer founds to have 20% batteries with high Sulphur contains then recommended by Law. If a random sample of 8 batteries are considered for study, calculate probability that **07**

(1) At least one of them have high Sulphur contains then recommended by Law

(2) More than 2 of them have high Sulphur contains then recommended by Law

(b) Explain in detail Baye's rule with example. **07**

OR

Q.3 **(a)** Explain in detail Empirical rule and Chebyshev's theorem **07**

(b) A bulb manufacturer took random sample of 87 LED bulbs and found average life of sample bulbs as 3352 hours with S.D. of 1100. A sample of 76 Solar bulbs reflects average life of 5727 hours with S.D. of 1700. Co. wants to prove that the average life of solar bulbs is higher than that of LED bulbs. Using significance level of 0.001, will they be able to reject null hypothesis? **07**

Q.4 **(a)** Calculate the coefficient of Correlation between Salary and Amount of spending on online shopping and interpret the same **07**

Salary	Amount spending on online shopping	Salary	Amount spending on online shopping
10	2	14	2
12	1	12	3
15	3	12	1
13	2	12	2

(b) Detail about "Non Parametric Tests and its utility". **07**

OR

Q.4 **(a)** In detail, explain the basic of "Multivariate Data Analysis" and also supplement your answer with some popular Multivariate Data Analysis technique and it's application. **07**

(b) Is the transportation method used to ship the product is independent of Industry? Consider the following data of various Industry and transportation mode (Use $\alpha = 0.05$) **07**

		Method of transportation		
		Air	Road	Rail
Industry	Textile	10	15	20
	Diamond	20	15	20

Q.5 It is identified that the quality and performance of the refrigerator is measured through the time and electricity that they require to cool down its temperature to certain level. It is also estimated that the manufacturer of the refrigerator fights to capture the market space through the star ratings and time required for cooling along with the capacity of refrigeration. In line with the same an essential study has been conducted by one of the largest refrigerator manufacturing firm for

The refrigerator manufacturing firm have considered a random sample of 15 refrigerators is considered to check the time required (in min.) by refrigerator to cool down to temperature of 5^{o}C and noted and presented the same as follows.

3, 2, 1, 2, 5, 6, 8, 7, 4, 5, 9, 2, 3, 1, 5

On the basis of the above data you are required to answer the following

(a) Estimate the mean time required by the selected refrigerators to cool down to temperature of 5^{o}C **07**

(b) If the company believes that the population mean time to cool down to temperature of 5^{o}C is 4.5 min. with S.D. of 1.25 mins, can it be concluded that there is no significance difference between sample and population mean with 5% level of significance? **07**

OR

Q.5 (a) Calculate the standard deviation of the time required by the selected refrigerators to cool down to temperature of 5^{o}C **07**

(b) Estimate the range and identify the lowest and highest time required by the selected refrigerators to cool down to temperature of 5^{o}C **07**

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