Seat No. /Enrollment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA-SEMESTER-I-EXAMINATION- SUMMER-2024

Subject Code: 4519207 **Date: 15/06/2024**

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.1 **Define:** **14**

a) Skewness
b) Inverse Probabilty
c) Level of significance
d) Null Hypothesis
e) Paired t - test
f) factor analysis
g) Multiple regression

Q.2 **(A)** Write a note on **07**

(i) One tailed test and two tailed test
(ii) Types of error – Type –I and Type – II

Q.2 **(B)** What is non- parametric test? Explain Kruskal – Wallis multivariate test. **07**

OR

Q.2 **(B)** Use the following data for chi-square and level of significance 0.01 to determine whether the observed frequencies represent a uniform distribution. **07**

Category	1	2	3	4	5	6	7	8
f_o	19	17	14	18	19	21	18	18

Q.3 **(A)** The incidence of occupational disease in an industry is such that the workers have 20 percent chance of suffering from it. What is the probability that out of six workers 4 or more will come in contact of the disease? **07**

(B) What is meant by 'correlation'? Distinguish between positive, negative and Zero correlation. **07**

OR

Q.3 **(A)** In a town, 10 accidents took place in a span of 50 days. Assuming that the number of accidents per day follows the passion distribution, find the probability that there will be three or more accidents in a day. **07**

(B) The HR manager wishes to see if there has been any change in the ability of trainees after a specific training programme. The trainees take an aptitude test before the start of the programme and an equivalent one after they have completed it. The scores recorded are given below. Has any change taken place at 5 percent significance level? **07**

Trainee	Score before training	Score after training
A	75	70
B	70	77
C	46	57
D	68	60
E	68	79
F	43	64
G	55	55
H	68	77
I	77	76

Q.4 **(A)** The life time of a certain kind of electric devices have a mean of 300 hours and standard deviation of 25 hours. Assuming that the distribution of these lifetimes, which are measured to the nearest hour, can be approximated closely with a normal curve: **07**

a. Find the probability that any one of these electronic devices will have a life time of more than 350 hours.
b. What percentage will have lifetime of 300 hours or less?
c. What percentage will have a life time from 220 to 260 hours?

(B) Write a note on spearman's Rank correlation method. **07**

OR

Q.4 **(A)** A company is considering two different television advertisements for promotion of a new product. Management believes that advertisement A is more effective than advertisement B. Two test market areas with identical consumer characteristics are selected: advertisement A was used in one area and advertisement B in another area. In a random sample of 60 customers who saw advertisement A, 18 had tired the product. In a random sample of 100 customers who saw advertisement B, 22 had tried the product. Does this indicate that advertisement A is more effective than advertisement B, if a 5 percent level of significance is used? **07**

(B) Use the Kruskal – Wallis test to determine whether there is a significant difference in the following groups. Use level of significance 5 %. **07**

Group 1	Group 2	Group 3
1	12	14
3	4	9.5
8	7	17
6	9.5	15
11	13	16
	2	18
	5	

Q.5 **CASE STUDY** **14**

The Indian Department of the interior releases figures on mineral production. Following are the 14 leading states in nonfuel mineral production in the India.

State	Value (Rs. In Lacs)
Maharashtra	4.73
Gujarat	3.64
Karnataka	3.53

Assam	2.87
Madhya Pradesh	2.61
Punjab	2.59
Bihar	2.07
Uttar Pradesh	1.79
Tamil Nadu	1.77
Rajasthan	1.69
Jammu	1.68
Goa	1.41
Andhra Pradesh	1.37
Sikkim	1.20

Questions:

(a) . Calculate Mean, Median

(b) .Calculate the range, mean absolute deviation and sample variance,

OR

Q.5 **14**

Questions :

(a) . Calculate Sample standard deviation

(b) . The Pearsonian coefficient of skewness for these data.

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