Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

PHARM.D YEAR-4 EXAMINATION – SUMMER - 2025

Subject Code: 848804 **Date: 08-05-2025**

Subject Name: Biostatistics & Research Methodology

Time: 02:30 P.M. TO 5:30 P.M. **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Explain the following. **06**
(i) Cohorts studies (ii) Latin Square Design

(b) Classify the sampling methods. Explain the simple random sampling. **04**

(c) Differentiate Type-I and Type-II error for hypothesis testing. **04**

Q.2 **(a)** Enlist the methods of studying correlation. Explain Karl Pearson's product moment method. **06**

(b) Discuss about different sections included in a research report. **04**

(c) A sample of 20 persons drawn from the same universe showed the number of attacks of cold per person as follow. **04**

Data: 7, 2, 5, 0, 1, 5, 5, 6, 7, 6, 2, 6, 9, 4, 8, 8, 6, 7, 9, 3.

Calculate mean, standard deviation and standard error mean for the above data and comment on your results.

Q.3 **(a)** The laboratories A and B carry out independent estimates of disintegration times (DT) for Ibuprofen tablets. The disintegration time obtained by the laboratories are as follows. **06**

Batch number	1	2	3	4	5	6	7	8	9	10
Laboratory A (DT in min)	7.8	8.2	7.1	3.5	8.3	6.5	9.2	4.4	7.6	8.9
Laboratory B (DT in min)	9.1	8.6	8.5	4.2	7.8	7.3	9.7	6.5	6.3	6.5

Is there any significant difference between the disintegration time obtained by the two laboratories? ($t_{(0.05, 9)}$ =2.26).

(b) Explain the following terms related to testing of hypothesis. (1) Null hypothesis (2) Level of significance **04**

(c) What is χ^2 test? Under what conditions is it applicable? **04**

Q.4 **(a)** A standred curve passing through the origin was prepared for colorimentric estimation of sulphadiazine. The concentration and absorbance's are given below. Find the equation of line. **06**

Concentration(µg/ml)	5	10	15	20	30	40
Absorbance	0.120	0.231	0.362	0.458	0.698	0.888

(b) Define coefficient of correlation. Explain how you will interpret the value of coefficient of correlation. **04**

(c) Discuss importance of p value in statistical tests with suitable examples. **04**

Q.5 **(a)** Explain the procedure of analysis of variance with one-way classification. **06**

(b) Explain Wilcoxan signed rank test and Mann Whitney U test. **04**

(c) In epidemiology, what is the distinction between incidence and prevalence, and how are these indicators determined? **04**

Q. 6	**(a)**	How would you calculate the relative risk and attributable risk? Explain with suitable example.	**06**
	(b)	Write about the importance of the patient medication profile. What information is recorded in it?	**04**
	(c)	Discuss the computer applications in hospital pharmacy.	**04**
Q.7	**(a)**	Describe the benefits and drawbacks of computerized prescriptions.	**06**
	(b)	How admixtures are prepared? Explain the role of pharmacist in intravenous admixtures preparation.	**04**
	(c)	Enlist statistical software used for clinical trial approach. Write applications of SPSS.	**04**

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