Seat No.: _____   Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
Pharm D – 4th Year/Pharm.D.(PB) – 1st Year • EXAMINATION – WINTER - 2023

Subject Code: 848804/818904   **Date:19/01/2024**
Subject Name: BIOSTATISTICS AND RESEARCH METHODOLOGY
Time: 2:30 PM to 5:30 PM   **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)**	What are the key elements of a report, and what are the different types of reports?	**06**
	(b)	How would you determine the sample size for a simple comparative experiment, and what factors would you need to consider in your calculations?	**04**
	(c)	Define 't' test, give different situations in which the unpaired and paired 't' tests are applied.	**04**
Q.2	**(a)**	The total serum proteins (gm %) of 24 subjects are as follows: 7.8, 7.2, 7.0, 6.8, 7.4, 7.2, 7.2,7.4, 7.2, 6.6, 7.1, 7.3, 7.5, 7.4, 7.4, 7.2, 7.2, 6.9, 5.8, 7.2, 7.3, 7.0, 7.3, 6.8. Find the mean and standard deviation for the above data.	**06**
	(b)	Given a dataset, how would you calculate the range, variance, and coefficient of variation.	**04**
	(c)	Give your comments on the following statements: i) Doughnut and pie diagrams serve the same purpose. ii) Histogram and Column charts are not the same.	**04**

Q.3 **(a)** Measurements of BMI for a sample of 10 healthy adult males are as follows: **06**

Subject	1	2	3	4	5	6	7	8	9	10
BMI	21	23	32	24	47	22	45	37	24	35

Based on the data can we conclude that the mean BMI of the population from which the sample was drawn is 35. ($t_{9,0.05} = 2.262$)

	(b)	Describe the key features of semilogarithmic plots and scatter plots.	**04**
	(c)	How does the level of significance determine the likelihood of rejecting the null hypothesis, and what are the potential consequences of making a Type I or Type II error?	**04**

Q.4 **(a)** The following data show the temperature (X) and the pulse rate (Y) of 8 patients. Compute the coefficient of correlation between X and Y. **06**

Patient No.	1	2	3	4	5	6	7	8
X	98	97	102	100	99	101	99	101
Y	100	91	63	80	92	70	90	72

	(b)	Differentiate parametric and non parametric tests.	**04**
	(c)	Discuss importance of p value in statistical tests with suitable examples.	**04**

Q.5 **(a)** **06**

Drug Potency (X)	60	80	90	100	120
Assay (Y)	61	79	91	102	119

The following are the results of five assays of different but known potency
Find the equatin of line of regressin of Y on X and estimate Y when X = 95.

	(b)	Write a brief note on various types of clinical study designs.	**04**
	(c)	Discuss role of computers in management of Adverse drug reactions.	**04**

Q. 6 **(a)** Assess the potential benefits and drawbacks of using computer systems for pharmaceutical care in community pharmacy, and determine how these systems can be used to enhance patient outcomes and optimize drug therapy. **06**

(b) What is the difference between incidence and prevalence in epidemiology, and how are these measures calculated? **04**

(c) Given data on the incidence or prevalence of a disease in different populations, how would you calculate the relative risk and interpret the results? **04**

Q.7 **(a)** Analyze the role of computer systems in hospital pharmacy inventory control and management reporting and discuss how these systems can be used to optimize medication usage and reduce waste. **06**

(b) What are the advantages of using a computerized drug information retrieval system in community pharmacy? **04**

(c) Briefly describe use of computers in pharmaceutical care in community pharmacy. **04**

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