Seat No.: _____   Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
B.Pharm - SEMESTER–VIII • EXAMINATION – WINTER -2021

Subject Code: BP801TT   **Date: 23/11/2021**
Subject Name: Biostatistics and Research Methodology
Time: 10:30 am to 01:30 pm   **Total Marks: 80**
Instructions:
   1. **Attempt any five questions.**
   2. **Make suitable assumptions wherever necessary.**
   3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Find the Mean, Mode and Median of following data. 2, 4, 7, 1, 6, 9, 5, 4, 4, 3, 4	**06**
	(b)	Write a short note on central composite design.	**05**
	(c)	Explain in detail of Probability, Binomial distribution.	**05**
Q.2	**(a)**	Find the Karl Pearson's coefficient of correlation from the following data.	**06**

x	5	9	13	17	21
y	12	20	25	33	35

	(b)	What do you meant by Research? Explain experimental design techniques.	**05**
	(c)	What is SPSS? Write down their applications.	**05**
Q.3	**(a)**	What is hypothesis? What are different types of hypothesis? Explain how you will formulate a hypothesis with a suitable example.	**06**
	(b)	What is meant by regression modeling? Explain hypothesis testing in simple and multiple regression models.	**05**
	(c)	Differentiate SD and SEM.	**05**
Q.4	**(a)**	Describe the construction of any three types of graphical representation of statistical data with suitable examples.	**06**
	(b)	What do you meant by factorial design? Write some advantages of factorial design.	**05**
	(c)	Explain Blocking and Confounding the 2^k factorial design in two blocks.	**05**
Q.5	**(a)**	Write a note on ANOVA (Analysis of Variance).	**06**
	(b)	Explain Wilcoxan signed rank test and Mann Whitney U test.	**05**
	(c)	Explain different observational study designs.	**05**
Q. 6	**(a)**	Explain the following. (i) Cohorts studies (ii) Report writing and presentation of data	**06**
	(b)	Discuss various phases in designing clinical trial with examples.	**05**
	(c)	Define Range and Standard deviation. Find the standard deviation of following data. 1.24, 5.19, 1.62, 9.54, 2.63, 4.25, 5.34	**05**
Q.7	**(a)**	Define the following. (i) Null hypothesis and alternative hypothesis (ii) Error-I type and Error-II type (iii) Sampling and Essence of Sampling	**06**
	(b)	Classify and explain different types of t tests.	**05**
	(c)	What is Plagiarism? What are the needs for research?	**05**

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