GUJARAT TECHNOLOGICAL UNIVERSITY
POST GRADUATE DIPLOMA IN BIOINFORMATICS - SEMESTER – I EXAMINATION – SUMMER - 2025

Subject Code: 1310105   **Date: 03 June 2025**
Subject Name: Statistics
Time: 02:30 PM TO 05:00 PM   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**Write a note on following**	**(Marks-10X2=20)**

1. Simple Random Sampling
2. Stratified Sampling
3. Standard Deviation
4. Poisson Distribution
5. Chi-Square Test
6. Differentiate between mutually exclusive and equally likely events
7. State the law of total probability
8. Differentiate between positive and negative correlation
9. Differentiate between one-tailed and two-tailed tests
10. Confidence interval

Q.2	**Answer the following (Any 2 out of 3)**	**(Marks-2X10=20)**

1. Explain the different types of biological data with examples.
2. Explain the z-test and t-test. Compare their applications and assumptions.
3. Discuss the principles and use of analysis of variance (ANOVA) in randomized block designs.

Q.3	**Answer the following (Any 6 out of 8)**	**(Marks-6X5=30)**

1. Describe the properties of arithmetic mean.
2. How do you calculate the median in a grouped data set? Explain the steps and solve the following data set:

Class Interval	Frequency
0 - 10	5
10 - 20	8
20 - 30	12
30 - 40	20
40 - 50	15

3. Explain the coefficient of variation and its importance.
4. Define probability, explain its importance in statistics, and describe the theorem of probability.

5. What is the binomial distribution? Provide a real-life example.
6. Differentiate between correlation and covariance in detail.
7. Define and differentiate between null and alternate hypotheses.
8. Compare different experimental designs with real-world examples.

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