Roll No:
Date: __/__/____

St. Claret College

Autonomous, Bengaluru

ST. CLARET COLLEGE LIBRARY Bengaluru-13 AUTONOMOUS

UG END SEMESTER EXAMINATION-MAY 2026
B.Sc. IV SEMESTER
ST 425: STATISTICAL INFERENCE - II

27

TIME: 3 hours. **MAX. MARKS: 80**

This paper contains TWO printed pages and FOUR parts

Instructions:
1. **Verify and ensure that the question paper is completely printed.**
2. **Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.**
3. **Students must check the course title and course code before answering the questions.**

PART-A

Answer ALL questions. Each answer carries ONE mark. **[1 x 10 = 10]**

1. A Type I error occurs when
   a) Accepting a false null hypothesis b) Rejecting a true null hypothesis
   c) Accepting a true null hypothesis d) Rejecting a false null hypothesis
2. A hypothesis that completely specifies the population is called
   a) Simple hypothesis b) Composite hypothesis
   c) Null hypothesis d) Alternative hypothesis
3. The probability of Type-II error is denoted by
   a) α b) β c) γ d) θ
4. The power of the test is equal to
   a) α b) $1-\alpha$ c) $1-\beta$ d) β
5. The critical region is also known as
   a) Acceptance region b) Parameter space c) Sample space d) Rejection region
6. For large samples, the test statistic generally follows
   a) Normal distribution b) t-distribution c) F-distribution d) Chi-square distribution
7. The test used for goodness of fit is
   a) t-test b) F-test c) Chi-square test d) Z-test
8. The run test is used to test
   a) Independence b) Randomness c) Normality d) Equality of means
9. The Mann-Whitney test is used for
   a) Paired samples b) Testing variance c) Correlation d) Two samples
10. SPRT stands for
    a) Sequential Probability Ratio Test b) Statistical Probability Ratio Test
    c) Sample Probability Random Test d) Sequential Parametric Ratio Test

PART-B

Answer any TEN questions. Each answer carries TWO marks. **[2 x 10 = 20]**

11. Define Power of the Test.
12. What is the level of significance.
13. Define null and alternative hypotheses.
14. Define Randomized tests.
15. Write the Test statistic for NP Lemma.
16. Distinguish between simple and composite hypothesis.
17. What is a large sample test
18. Define run at run test with an example.
19. Define Non parametric test.
20. What is Chi-square test?
21. Define Signed Ranks.
22. Define SPRT.

PART-C

Answer any FOUR questions. Each answer carries FIVE marks. **[5 x 4 =20]**

23. Define critical region, acceptance region, and critical value.
24. Provide the tabular format to describe Type I and Type II errors.
25. Provide the test procedure for testing the significance of the mean of a population using small samples.
26. Explain the slope of simple linear regression.
27. Provide the one sample Kolmogrov Smirnov's test.
28. Explain the procedure of signed rank test for median.

PART-D

Answer any THREE questions. Each answer carries TEN marks. **[10 x 3 = 30]**

29. Explain the test procedure for testing two proportions
30. Provide the test procedure for testing the equality of two means using t-test.
31. Explain run test for randomness with the procedure.
32. What is U statistics and explain the Mann-Whitney U test with procedure.
33. Explain SPRT for mean of normal distribution.