B.Sc. DEGREE EXAMINATION,APRIL 2019
III Year V Semester
Statistical Inference - II

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Define two types of errors.
2. What do you mean by uniformly most powerful test?
3. Define power of a test.
4. What is meant by power function?
5. Define critical region.
6. What is meant by likelihood ratio test?
7. State most powerful test.
8. Write down the assumptions of sign test.
9. State OC function of SPRT.
10. Write down the assumptions that are associated with non- parametric tests?
11. What is a statistical hypothesis?
12. Define run test.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Explain the testing for equality of variances of two normal populations using LRT.
14. What are the advantages and drawbacks of non- parametric methods over parametric methods?
15. Derive the ASN expression for the SPRT of a simple hypothesis against a simple alternative.
16. Find the likelihood ratio test for testing mean of a normal population.
17. What are the properties of likelihood ratio test?
18. Prove that the most powerful critical region for testing the null hypothesis $H_0 : \theta = \theta_0$ against the alternative hypothesis $H_1 : \theta = \theta_1$ should be unbiased.
19. State the Mann-Whitney Wilcoxon test and hence obtain the mean and variance of the statistic T.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. State and prove Neyman – Pearson lemma.
21. Let p be the probability that a coin will fall head in a single toss in order to test $H_0 : p = 1/2$ against $H_1 : p = \frac{3}{4}$. The coin is tossed 5 times and H_0 is rejected if more than 3 heads are obtained. Find the probability of type I and type II errors and power of the test.
22. Describe the procedure in median test for two independent samples.
23. What is SPRT? How will you obtain an optimum test of a specified strength for a simple null hypothesis against a simple alternative?
24. Explain (a) Run test (b) Test for randomness.

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