LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION –**STATISTICS**

FIFTH SEMESTER – **APRIL 2018**

ST 5505/ ST 5510– TESTING OF HYPOTHESES

Date: 03-05-2018 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART – A

Answer all questions: (10x2=20)

1. Define Best Critical Region.
2. Define Power of a test.
3. Give an example of a one parameter exponential family distribution.
4. Define a Uniformly Most Powerful Test.
5. Define Likelihood function, and state how it differs from diversity function.
6. State any two properties of a Likelihood Ratio Test
7. State the test statistic used to test the meanof normal population, When samples size is large.
8. State any two applications of tests of significance based on Student – t distribution.
9. Mention any on condition, under which a Non-Parametric test is appropriate.
10. Describe Median test.

PART – B

Answer any FIVE questions: (5x8=40)

11. Distinguish between Type I and Type II errors with suitable examples.
12. What is a Randomized test? Give an example.
13. Describe x^2 - test for independence of attributes.
14. Describe SPRT and state any two of its applications.
15. Describe the procedure for testing the equality of two proportions.
16. Describe the procedure of Likelihood Ratio test. Give an example.
17. Describe the Kolmogorov-Smirnov one sample test.
18. What is ASN of a sequential test? Explain with example.

SECTION – C

Answer any TWO questions: **(2x20=40)**

19. a. Use the Neyman-Pearson Lemma to obtain best CR for testing $H_0 : \theta = \theta_0$ against $H_1 : \theta_1 > \theta_0$, based onthe Normal population $N(\theta, \sigma^2)$, where σ^2 is known.

    b. $If \{x / x \geq 1\}$ is a CR for testing against $H_0 : \theta = 1 against H_1 : \theta = 2$ on the basis of the single observation from the population with density $f(x, \theta) = \theta e^{-x\theta}$ where $x \geq 0$, find the probability of Type I error.

20. a. Describe the testing of significance for equality of variances of two independent Normal population

    b. Describe the test of significance for equality of means of the Normal Population.

21. a. Describe Wilcoxon Man whitney U test.

    b. ExplainKruskal Wallis test.

22. a. State and derive Wald's equation on sequential sampling.

    b. Show that SPRT terminates with probability one.

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