M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Statistical Inference - II

Time : 3 Hours   **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define Uniformly Most Powerful test.

2. Define Parameter space.

3. When a test is said to be unbiased?

4. What is critical region?

5. What is LMP test?

6. Define Similar test.

7. Define Binomial distribution.

8. What is SPRT?

9. State the significance of testing the Sign test.

10. Write any two assumptions of Non parametric test.

11. Define Operating Characteristic function.

12. How do you take decision based on a Randomizes Test.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Show that the power of the test is greater than α, if size of the test is α.

14. State and prove a necessary sufficient condition for all similar tests have Neyman structure.

15. Show that the function of any test for the one parameter exponential family of distribution is continuous and differentiable.

16. Explain the Likelihood Ratio test and mention its properties.

17. Explain the Wilcoxon Signed rank for testing the randomness of the given sequence of obseravation.

18. What are the optimum properties of SPRT.

19. Discuss UMPU test with illustration.

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

Answer any **THREE** questions

20. State and Prove the necessary and sufficient condition of the Neyman- Pearson fundamental lemma.

21. Derive the LMP test for testing $H_0 : \theta = \theta_0 : 0$ vs $H_1 : \theta \neq \theta_0$, using a random sample n observations from N(μ, θ) with known μ and θ being the variance.

22. Derive the UMP test for teating $H_0 : \theta = \theta_0 : 0$ vs $H_1 : \theta \neq \theta_0$ on the basis of sample from N(μ, σ) with known σ^2.

23. Develop the Likelihood ratio test for testing $H_0 : \sigma^2 = \sigma_0^2$ based on a random sample of size n from N(μ, σ^2) population.

24. Explain Kruskal wallis test indicating clearly the assumption and hypothesis that is tested.

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