SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc.Statistics - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - V
20USTCT5009 - Statistical Inference - II

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Explain the concept of most powerful test. State the theorem used to determine the best critical region for testing a simple null hypothesis against simple alternative hypothesis.
2. Write a note on Uniformly most powerful test.
3. Evaluate Likelihood ratio criterion.
4. Explain Kruskal Wallies test.
5. Explain OC and ASN functions of SPRT.
6. Explain test procedure for testing of Hypothesis.
7. Given a random sample $x_1, x_2, ..., x_n$ from the distribution with the pdf $f(x, \theta) = \theta e^{-\theta x}$; $x > 0$; $\theta > 0$. Show that there exist no UMPT for testing $H_0 : \theta = \theta_0$ against $H_1 : \theta > \theta_0$
8. Explain about Mann-Whitney U test.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. State and prove Neymann Pearson Lemma.
10. Let $x_1, x_2, ..., x_n$ be a random sample size n from N (μ,σ^2) population, where μ is known and σ^2 is unknown. Obtain the B.C.R of size α, for testing $H_0 : \sigma^2 = \sigma_0^2$ against $H_1 : \sigma^2 = \sigma_1^2$. Obtain the power function of the test.
11. Obtain UMPT (LRT) for testing $H_0 : \mu = \mu_0$ against $H_1 : \mu \neq \mu_0$ for a normal population with parameter μ and σ^2 .
12. Briefly explain two samples Kolmogorov - Smirnov test.
13. Explain the SPRT stopping rule for the problem of testing $H_0 : \theta = \theta_0$ against $H_1 : \theta \neq \theta_1$ using random observations sequentially made on X follows B(1,θ)

*****