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 APRIL - 2024
SEMESTER - IV
20USTCT4007 - Statistical Inference - I

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

Section B

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

1. State and prove Invariance properties of consistent estimator.
2. Explain the method of moments.
3. Discuss the confidence Interval for proportion with example.
4. Describe the F-test for equality of variances of two populations.
5. State and prove Rao- Blackwell theorem.
6. Find the maximum likelihood estimate of the parameter θ of the distribution. $f(x:\theta) = \frac{1}{2}e^{-|x-\theta|}$
7. Prepare a note on assumptions about t-test.
8. Infer the chi square test for goodness of fit.

Section C

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

9. Describe
   a. State Neyman Pearson factorization theorem.
   b. Give the Properties of Estimators.
   c. Explain in detail about Consistency and sufficiency of statistic.
10. State and prove Cramer-Rao inequality.
11. A random sample of size n is drawn from a normal population N (μ, σ^2). Estimate μ and σ^2 by the method of maximum likelihood.
12. Derive the 100(1-α)% confidence interval for the variance ratio of two independent normal distributions with unknown means.
13. (i) Prove MVUBE is Unique.
    (ii) State and prove sufficiency Condition for consistent estimator.

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