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Statistics Department

Assignment – No. – 02 ***Paper – STA – 302***

1. Define Most efficient Estimator and Minimum Variance Unbiased Estimators.
2. In usual notations, prove that if T_1 is M.V.U.E and T_2 be any other unbiased estimator of a parameter θ, then the correlation coefficient between T_1 and T_2 is $\rho = \sqrt{e}$, where e is efficiency between T_1 and T_2.
3. Define Likelihood function and likelihood equation.
4. State and prove Fisher Neyman Theorem on sufficiency.
5. State and prove Rao-Blackwell theorem.
6. Explain the method of moments.
7. If a random sample of size n is taken from a Bernoulli distribution with parameter *p*, then obtain an estimator of parameter m by method of moments.
8. State and prove Rao-Cramer Inequality, stating regularity conditions.
9. Obtain the M.V.U.E. of a μ , if a r.v follows a N(μ, σ^2).
10. Derive the maximum likelihood estimator of a parameter θ, if a r.v. X follows an exponential distribution with the p.d.f. as f(x) = $\begin{cases} \theta e^{-\theta x} & , x > 0 \\ 0 & , otherwise \end{cases}$
11. State the principles of basic design and explain the principle of replication.
12. Give lay out, merits and demerits of completely randomised design.
13. Define MVBUE.
14. Define likelihood function, likelihood equation.
15. If a random sample is taken from a Poisson distribution with parameter m, then show that $\sum X_i$ is Sufficient estimator of parameter m.
16. Obtain the M.V.U.E. of a μ , if a r.v follows a N(μ, σ^2).