**B.Sc. DEGREE EXAMINATION, APRIL 2016.**

**II YEAR — IV SEMESTER**

**Major Paper VII— STATISTICAL INFERENCE-I**

**Time : 3 hours Max. marks : 60**

**SECTION A — (10 × 1 = 10 marks)**

**Answer any *TEN* questions.**

1. Define point estimation.
2. State the properties of good estimators.
3. Define efficiency of an estimator.
4. If T and T1 are unbiased estimators of θ, then show that there exist infinitely many unbiased estimators of θ.
5. Define BLUE
6. Describe the method of moments.
7. Explain the method of minimum variance.
8. What is meant by Interval Estimation?
9. Define Sampling Distribution of a Statistic.
10. Explain the concept of tests of significance.
11. Explain Type I and Type II Errors.
12. What is meant by Critical Value?

**SECTION B — (5 × 4 = 20 marks)**

**Answer any *FIVE* questions.**

1. State and prove a sufficient condition for consistency of an estimator T.
2. Prove that every statistic is not sufficient.
3. State Regularity Conditions for Cramer – Rao Inequality.
4. State the properties of Maximum Likelihood Estimators.
5. Describe the method of minimum chi – square.
6. Explain the test of significance for single proportion.
7. Explain briefly about internal estimation.

**SECTION C — (3 × 10 = 30 marks)**

 **Answer any *THREE* questions.**

1. State and prove Neyman – Fisher factorization theorem.
2. Derive Cramer – Rao inequality.
3. Prove that the maximum likelihood estimate of the parameter α of a population having density function: (2 / α2 ) (α – x), 0 < x < α, for a sample of unit size is 2x, x being the sample value. Show also that the estimate is biased.
4. Let Xi, (i = 1,2,…,n) be a random sample of size n from N(µ, σ2). Obtain 100(1 – α)% confidence interval for σ2 when µ is known.
5. Explain large sample procedure of test of significance for difference of means.

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