**B.Sc. DEGREE EXAMINATION, NOVEMBER 2015.**

**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. When do you say an estimator is efficient?
3. What is unbaisedness of an estimator?
4. Define sufficiency.
5. Define BLUE.
6. State any one property of Maximum likelihood estimator.
7. Define method of moments.
8. What do you mean by interval estimation?
9. What do you mean by confidence coefficient?
10. Write the 95%confidence interval for mean of *N(µ, σ2).*
11. Define null and alternative hypothesis.
12. What is critical region?

**SECTION B — (5 × 4 = 20 marks)**

**Answer any *FIVE* questions.**

1. Prove that the sample mean from *N( μ, σ2 )* is consistent for *μ*.
2. Prove that the minimum variance unbiased estimator is unique.
3. Find the MLE for θ in a Poisson distribution.
4. State and prove Rao-Blackwell theorem.
5. Explain briefly about the method of minimum chi square.
6. Obtain 100*(1-α)%* confidence interval for ratio of two variances.
7. Explain the steps involved in test of significance.

**SECTION C — (3 × 10 = 30 marks)**

 **Answer any *THREE* questions.**

1. State and prove Neyman factorization theorem.
2. Let xi’s , *i=1,2,...,n* is a random sample from the distribution.

*f (x,θ)=*exp(-(x-θ)), *0<x<∞; -∞<θ<∞.* Obtain sufficient statistic for *θ.*

1. Show that the sample mean $\overbar{x}$ in random sampling from

*f (x,θ)= (1/θ)exp(-(x/θ)), 0<x<∞, o* otherwise, when *0<θ<∞,* is an *MLE* estimator of θ and has variance *θ2/n.*

1. Find *100(1-α) %* confidence interval for difference of two proportions.
2. Explain the test for the equality of means of two Normal populations.

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