B.Sc. DEGREE EXAMINATION,APRIL 2020
II Year IV Semester
Statistical Inference - I

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

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Explain the problem of point estimation.
2. Define Consistent estimator.
3. When do we say an estimator is unbiased?
4. State Cramer-Rao inequality.
5. State the steps for method of moments estimation.
6. Write a note on Method of modified minimum chi-square.
7. Define Interval Estimation.
8. State the two sided $100(1-\alpha)$ % confidence interval for ration of variances of two normal populations.
9. State the assumption of t-test.
10. What is test of significance?
11. Give an example of an estimator which is consistent but not unbiased.
12. Define minimum variance bound estimator

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. State and Prove a sufficient condition for an estimator to be consistent.
14. Write a short note on BLUE.
15. State the properties of MLE.
16. Construct a confidence interval for proportions.
17. Describe the procedure to test the significance of mean.
18. State the condition for MVB estimator to exists and illustrate how this condition can be used to obtain an MVB estimator.
19. Prove that minimum variance unbiased estimator is unique.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Derive the sufficient statistic for the parameters of
    (i) Poisson Distribution
    (ii) Uniform $(0, \theta)$ Distribution.
21. State and Prove Rao-Blackwell theorem.
22. Derive the maximum likelihood estimators of the parameters of a normal distribution.
23. Derive the confidence interval for the difference in mean of two independent normal populations whose variance is equal.
24. Explain the Chi-square test for Goodness of fit of a distribution.

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