M.Sc. DEGREE EXAMINATION,NOVEMBER 2018
I Year II Semester
Core Elective
MATHEMATICAL STATISTICS

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define point estimation.
2. When an estimator is said to be locally minimum variance unbiased estimate?
3. State methods of estimation.
4. What does the method of moments consists of?
5. Give one example each for simple and composite hypothesis.
6. When a test is said to be similar?
7. Define likelihood ratio test.
8. What is meant by one-tailed and two-tailed t-tests?
9. Frame ANOVA table for one way classification.
10. Write the equation for simple regression model by stating the assumptions clearly.
11. Define LMVUE.
12. State the types of errors in hypothesis testing.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. State and prove Rao Blackwell theorem.
14. Find the parameters a and b of uniform distribution by the method of moments
15. Prove that U[0,θ] is not an exponential family but has an MLR.
16. Write short notes on invariant test.
17. Explain two-way ANOVA for one observation per cell.
18. Obtain necessary and sufficient condition for an unbiased estimator to be UMVUE.
19. Find mle for the parameter of Hypergeometric distribution.

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

Answer any **THREE** questions

20. State and prove Chapman-Robin's inequality
21. Obtain the confidence interval for the parameters of Normal distribution.
22. State and prove Neymann Pearson lemma.
23. Obtain likelihood ratio test for normal with two populations.
24. Explain in detail analysis of variance of regression.

M.Sc. DEGREE EXAMINATION,NOVEMBER 2018
I Year II Semester
Core Elective
MATHEMATICAL STATISTICS

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define point estimation.
2. When an estimator is said to be locally minimum variance unbiased estimate?
3. State methods of estimation.
4. What does the method of moments consists of?
5. Give one example each for simple and composite hypothesis.
6. When a test is said to be similar?
7. Define likelihood ratio test.
8. What is meant by one-tailed and two-tailed t-tests?
9. Frame ANOVA table for one way classification.
10. Write the equation for simple regression model by stating the assumptions clearly.
11. Define LMVUE.
12. State the types of errors in hypothesis testing.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. State and prove Rao Blackwell theorem.
14. Find the parameters a and b of uniform distribution by the method of moments
15. Prove that U[0,θ] is not an exponential family but has an MLR.
16. Write short notes on invariant test.
17. Explain two-way ANOVA for one observation per cell.
18. Obtain necessary and sufficient condition for an unbiased estimator to be UMVUE.
19. Find mle for the parameter of Hypergeometric distribution.

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

Answer any **THREE** questions

20. State and prove Chapman-Robin's inequality
21. Obtain the confidence interval for the parameters of Normal distribution.
22. State and prove Neymann Pearson lemma.
23. Obtain likelihood ratio test for normal with two populations.
24. Explain in detail analysis of variance of regression.