Reg. No. | | | | | | | | | |

BSCSTC 381

Choice Based Credit System VI Semester B.Sc. Degree Examination, September 2022
(2021 – 2022 Batch Onwards)
STATISTICS
Paper – VII : Statistical Inference – II and Design and Analysis of Experiments

Time : 3 Hours Max. Marks : 80

Instructions : *1)* ***A*** *single booklet containing* ***40*** *pages will be issued.*
2) ***No*** *additional sheets will be issued.*

PART – A

1. Answer **any ten** of the following. **(2×10=20)**
   a) Mention any one advantage and disadvantage of sequential testing.
   b) Briefly explain sequential probability ratio test procedure.
   c) Mention any two advantages of non parametric methods.
   d) Give the large sample approximation to sign test for testing the equality of location parameters of two population.
   e) Define the term analysis of variance.
   f) State Cochran's theorem.
   g) What do you mean by experimental error in designs of experiments ?
   h) State any one merit and demerit of CRD.
   i) State any two advantages of RBD.
   j) State any two applications of LSD.
   k) Briefly explain the terms "Factors" and "levels" in factorial experiment.
   l) What do you mean by contrast in factorial experiments ?

PART – B

Answer **any five** of the following. **(5×6=30)**

2. Derive SPRT for testing $H_0 : P = P_0$ against $H_1 : P = P_1 (>P_0)$, where P is the probability of success in a Bernoulli trial. Also write down the equations of acceptance line and rejection line.

P.T.O.

3. Explain sign test for testing median of a continuous population.

4. Show that the mean sum of squares due to errors is an unbiased estimator of error variance in one way classification.

5. What do you mean by least significant difference ? Also explain the procedure of testing the difference between any two treatment means in RBD when the general hypothesis is rejected.

6. Explain the terms randomization and local control in designs of experiments.

7. Explain Latin square design. Mention its merits and demerits.

8. Derive the expression for two missing values in RBD.

9. For a 2^2 factorial experiment, derive the expression for the main effects and interaction effects, clearly mentioning the steps involved.

PART – C

Answer **any three** of the following. **(10×3=30)**

10. Derive the SPRT procedure for testing $H_0 : \mu = \mu_0$ against $H_1 : \mu = \mu_1$, where μ is the mean of a normal population with known variance σ_0^2. Also derive the equations of acceptance line and rejection line.

11. Explain run test for testing the equality of medians of two continuous population. Derive its null distribution. Also give its large sample approximation.

12. Give the complete statistical analysis of two way classification.

13. Give the complete analysis of 2^3 factorial experiment carried out in RBD.

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