DCST601

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

VI Semester B.Sc. Degree Examination July/August-2024

STATISTICS

Analysis of variance and Design of Experiments

(NEP Scheme)

Paper : VII

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates :

1. **Answer any Five sub-divisions from Section A and Five questions form Section B.**
2. **Scientific Calculators are allowed.**

SECTION - A

I. Answer any Five sub-divisions from the following. **(5×3=15)**

1. a) Define analysis of variance (ANOVA) state its uses.

   b) What is a linear model? Explain fixed effect model of ANOVA.

   c) Explain

      i) Randomisation and

      ii) Local control

   d) What is completely Randomized design (CRD)? Mention the merits of CRD.

   e) Define BIBD. State the important uses of BIBD.

   f) Write a note on Yuden square design.

   g) Discuss the advantages of factorial experiment over simple design of experiments.

   h) Define contract and orthogonal contrast.

   i) What is confounding? State its need.

[P.T.O.

SECTION - B

II. Answer any Five questions from the following. **(5×9=45)**

2. Explain ANOVA for a one-way classified data. **(9)**

3. Explain ANOVA for two way classified data with interaction effect. **(9)**

4. Describe Randomised Block Design (RBD). **(9)**

5. Obtain the expression for estimatiny missing observation in a Latin square design (LSD). Also, explain its analysis. **(9)**

6. a) Explain the yates method of obtaining factorial effect totals in a 2^3 factorial experiment using treatment total from all the given replicates.

   b) For a 2^3 factorial experiment derive an expression for interaction effects AB and ABC. **(4+5)**

7. Describe the procedure of analysis if a 2^3 factorial experiment with three replication tried in a RBD where in second order interaction is confounded in all replications and set up the ANOVA table. **(9)**

8. Explain the analysis of a partially confounded 2^3 factorial experiment with four replicates in a randomised block set up with the interaction effects confounded. **(9)**