

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2022
(Regular/Improvement/Supplementary)

STATISTICS
FMST2C09-DESIGN AND ANALYSIS OF EXPERIMENTS

Time: 3 Hours

Maximum Weightage: 30

Part A: Answer any *four* questions. Each carries 2 weightage.

1. What are estimable parametric functions?
2. Discuss the basic principles satisfied in completely randomized design.
3. Distinguish between fixed effect and random effect models.
4. Explain different methods of model adequacy checking.
5. What is lattice design?
6. Define PBIBD with m associate classes.
7. What are factorial experiments? State the advantage of factorial experiments over single factor experiments.

(4 × 2 = 8 weightage)

Part B: Answer any *four* questions. Each carries 3 weightage.

8. Define a linear model. Explain the procedure to test the general linear hypothesis based on a linear model.
9. Explain Kruskal- Wallis test.
10. Obtain the efficiency of RBD over CRD.
11. Explain the least square method of estimating one missing observation in a LSD.
12. State and prove the parametric relations for the existence of a BIBD.
13. Explain briefly about the partial confounding in the 2^3 factorial experiment.
14. Construct a 2^{4-1} factorial design. Write down the defining relation and the aliases for this design.

(4 × 3 = 12 weightage)

Part C: Answer any *two* questions. Each carries 5 weightage.

15. Describe analysis of CRD with k observations per cell.
16. Describe analysis covariance of randomized block design with one concomitant variable.
17. What are incomplete block designs? Give intrablock analysis of BIBD.
18. Develop the analysis of variance for a 2^4 factorial design, when the highest order interaction is confounded.

(2 × 5 = 10 weightage)