

35
FIFTH SEMESTER B.SC DEGREE EXAMINATION MARCH/APRIL-2022
(CBCS)

STATISTICS VI: Design and Analysis of Experiments

Time:3 hours

Max Marks:70

- Instructions: 1. Answer any Five Questions from Section- A and
Answer any Five Questions from Section- B
2. Scientific Calculators are permitted



SECTION-A

- I. Answer any five of the following (5x5=25)
1. a) Define Analysis of Variance (ANOVA). Mention the assumptions involved in ANOVA.
b) What is linear mathematical mode.?
 2. Obtain the expectation of treatment Sum of squares in one-way classified data.
 3. a) Define Design of Experiment. What are the phases of it. Explain.
b) Explain i) Experimental Error.
ii) Replication.
 4. Explain the analysis of RBD.
 5. Explain the efficiency of a design and also obtain the relative efficiency of RBD Over CRD.
 6. Explain factorial experiment. Mention its advantages.
 7. Explain analysis of 2^2 factorial experiment.
 8. a) What is confounding ? State its need.
b) Distinguish between complete and partial confounding.

SECTION-B

- II. Answer any five of the following (5x9=45)
9. a) Explain the Validity of F-test in ANOVA.
b) Obtain the expectation of error Sum of Squares in ANOVA for one-way classified data. (3 + 6)
 10. a) Obtain the expectation of treatment Sum of Square in ANOVA for two-way classified data with Single observation per cell.
b) Explain Tukey's method in ANOVA. (6 + 3)
 11. Describe the analysis of CRD. (9)
 12. Explain the analysis of Latin Square Design. (9)
 13. Obtain the efficiency of LSD over RBD, under both the cases. (9)
 14. a) For a 2^3 factorial experiment, derive an expression for interaction effects AB and ABC.
b) Describe factorial experiment and obtain the expression for main and interaction effects. (5 + 4)
 15. Explain the procedure of confounding in a 2^3 factorial experiment. Describe the analysis of 2^3 factorial experiment by confounding. (9)