LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

SIXTH SEMESTER – **APRIL 2023**

16/17/18UST6MC02 – DESIGN AND ANALYSIS OF EXPERIMENTS

Date: 03-05-2023   Dept. No.   Max. : 100 Marks
Time: 09:00 AM - 12:00 NOON

SECTION-A

Answer ALL the questions.   **(10 x 2 = 20)**

1. Define orthogonal contrasts.
2. What is the need for studying Analysis of variance?
3. What are the assumptions in ANOVA?
4. What is the difference between fixed effect model and mixed effect model?
5. Define Experimental units and treatment with an example.
6. How do we estimate the missing observation in the case of LSD?
7. State the advantages of factorial experiment over a simple experiment.
8. Write the treatment combinations in 2^3 Factorial Experiments.
9. What is meant by complete confounding?
10. When is a BIBD said to be symmetric?

SECTION-B

Answer any FIVE questions.   **(5 x 8 = 40)**

11. Explain the principles of design of experiments.
12. Explain the one- way classification model with its statistical analysis.
13. Discuss the advantages and disadvantages of CRD and RBD.
14. Define missing plot techniques? Estimate two missing values of RBD.
15. Obtain an expression for the efficiency of LSD over RBD.
16. Derive the Statistical analysis of 2^2 Factorial Design.
17. Distinguish partial confounding and complete confounding.
18. Define a BIBD and establish the relationships among its parameters.

SECTION-C

Answer any TWO questions.   **(2 x 20 =40)**

19. Explain about Two-way classification with m observations per cell with its Statistical analysis of the model.
20. Explain the concept and analysis of LSD with a layout.
21. Explain the concept and analysis of 2^3 Factorial design.
22. Discuss in detail the intra-block analysis of BIBD.

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