LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - **STATISTICS**

FOURTH SEMESTER – **APRIL 2013**

ST 4809 - APPLIED EXPERIMENTAL DESIGN

Date : 25/04/2013 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

SECTION – A

Answer all the questions: (10 x 2 = 20 marks)

1 .Define the term replication.

2. State any two agricultural applications of design of experiments.

3. What is meant by random model ? Give an example .

4. Briefly explain the term critical difference.

5. Define the term generator

6. Define principle fractions.

7. When do we go for repeated L.S.D ?

8. Define minimal function .

9. State any four parametric conditions of a PBIBD

10. Define a resolvable BIBD with an example .

SECTION-B

Answer any Five questions: (5 x 8 = 40 marks)

11. Describe, the analysis of variance for RBD stating all the hypothesis, ANOVA and conclusions.

12. Confound the highest order interaction in 2^4 design using 3 replications.

13.Define mutually orthogonal contrast and show that in 2^3 design all the contrasts are mutually orthogonal.

14. Discuss in detail the need for a Split-plot design with suitable example.

15. Derive the sum of squares for a 3^3 factorial design.

16. Explain the fractional factorial design with suitable illustration.

17.Explain the m-ple Lattice Square design and hence construct lattice square design when the block size k=3.

18. Construct group divisible design with three groups.

SECTION-C

Answer any Two questions: (2 x 20 = 40 marks)

19a. Discuss in detail the non-statistical principle of experimental design with suitable illustration.

b. Explain the efficiency of LSD over RBD with suitable application. (6+14 Marks)

20a. Explain the term key block and derive the block contents for ABCDE in 2^5 factorial design using key block.

b. Discuss in detail confounding in more than one block. (8 +12Marks)

21a. Construct triangular PBIBD with three associate class.

b. Explain the parametric conditions of a PBIBD (12+8 Marks)

22. Write shorts on the following
   a) Principal fraction
   b) Construction of BIBD using MOLS
   c) Lattice Square designs
   d) Galois Field (5+5+5+5-Marks)

*****