

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – STATISTICS

SIXTH SEMESTER – APRIL 2013

ST 6603/ST 6600 - DESIGN & ANALYSIS OF EXPERIMENTS

Date : 25/04/2013
Time : 1:00 - 4:00

Dept. No.

Max. : 100 Marks

PART – A

Answer **ALL** the questions:

(10 x 2 = 20 marks)

1. Define random effect model with an example.
2. Distinguish between pairwise and non-pairwise contrasts.
3. Mention the main objective of analysis of variance technique.
4. State the mathematical model used in analysis of variance in a two-way classification.
5. What is completely Randomized Design?
6. Explain why the number of treatments tested in a LSD should not be less than 3?
7. Define Orthogonal contrasts.
8. What is meant by confounding in a factorial experiment?
9. Define Incomplete Block Design.
10. When an incomplete block design is said to be balanced?

PART – B

Answer any **FIVE** questions:

(5 x 8 = 40 Marks)

11. In what way are contrasts helpful in the analysis of experimental data?
12. Explain the fixed effect model, with an example.
13. What factors are responsible for determining the number of replications?
14. Explain the model, layout and analysis of one way classification in analysis of variance.
15. Derive the formula to estimate two missing plots in a RBD.
16. Discuss the analysis of a Latin Square Design (LSD)
17. Explain the terms with illustrations: (i) partial confounding and (ii) complete confounding
18. Show that in BIBD $b \geq v$ (Fisher's inequality).

PART – C

Answer any **TWO** questions:

(2 x 20 = 40 Marks)

19. a) Write in detail about the linear design model with an example.
b) Explain, how the local control increase the efficiency of an experimental design.

20. a) How the efficiency of a design is measured? Derive the expression to measure the efficiency of RBD over CRD ?
- b) Explain, how the analysis are carried in a RBD?
21. a) Explain, how the main effects and interaction effects are derived in a 2^2 factorial experiment?.
- b) Define the linear effects and quadratic effects in a 3^2 factorial experiment. Also develop the ANOVA for 3^2 design.
22. Discuss in detail the analysis of a BIBD using intra-block information only.

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