LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SIXTH SEMESTER – **NOVEMBER 2016**

ST 6606/ST 6603/ST 6600 – DESIGN AND ANALYSIS OF EXPERIMENTS

Date: 14-11-2016   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

PART –A

Answer ALL questions.   (10* 2= 20 Marks)

1. What are the assumptions made in ANOVA?
2. What is analysis of variance?
3. What is an experimental design?
4. Define random effects model.
5. What is Randomized Block Design?
6. State the mathematical model used in analysis of variance for a two-way classification.
7. Give the layout for a 4*4 Latin Square Design.
8. What is confounding in factorial experiment?
9. What are the parameters of BIBD?
10. What is meant by factorial experiment?

PART –B

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

11. Explain the analysis of one way classification by giving layout, mathematical model and ANOVA table.
12. What is missing plot technique? Explain the methods of estimating one missing observation.
13. Explain Yate's table for 2^3 factorial experiments.
14. What are the advantages and disadvantages of confounding?
15. Explain briefly the methodology of CRD.
16. In the usual notation, show that vr=bk for a BIBD.
17. Distinguish between Incomplete Block Design and Balanced Incomplete Block Design.
18. What are different types of statistical model for experimental design? Explain mixed effect model in detail.

PART –C

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

19. (a) Explain the principles of Randomization, Replication and Local Control.
    (b) Explain the method of estimating one missing observation in a m*m LSD
20. (a) Give the method of calculating sum of squares for factorial experiments in general.
    (b) Give ANOVA table for a 2^3 design.
21. (a) Outline the statistical analysis of RBD.
    (b) Explain 3^2 factorial design with main effects and interaction effects and also Yate's method for various treatment totals in 3^2 design.
22. (a) Explain intra – block analysis of BIBD.
    (b) Explain the analysis of covariance in RBD with one concomitant variable.

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