

15P256

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Name.....

Reg.No.....

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, JULY 2016

(CUCSS - PG)

(Statistics)

CC15PST2C09-DESIGN AND ANALYSIS OF EXPERIMENTS

(2015 Admission)

Time: Three Hours

Maximum: 36 Weightage

PART A

(Answer all questions. Weightage 1 for each questions)

1. Explain the linear model of expectation.
2. What are estimable functions?
3. Define Analysis of variance. What are assumptions of ANOVA?
4. What do you mean by BLUE?
5. Define orthogonal contrasts of linear equations.
6. Develop the procedure for analysing a CRD with one observation per experimental unit.
7. Give an example of 5×5 Greco Latin Square Design.
8. Distinguish between inter and intra block analysis of a design.
9. Explain the situations where concomitant variable is recommendable?
10. What are resolvable BIBD. Give an example.
11. Define factorial experiments.
12. Write the layout of a 2^3 factorial design.

(12*1=12 weightage)

PART B

(Answer any eight questions. Weightage 2 for each questions)

13. Show that in a linear model $(Y, A\theta, \sigma^2 I)$ the number of independent estimable parametric function belonging to the error.
14. What are the basic principles of design? Explain
15. Write a short note on model adequacy checking.
16. Define :
 - a) Symmetrical factorial experiment.
 - b) Asymmetrical factorial experiment.
17. Obtain an expression for the efficiency of LSD compared to RBD.
18. Write down the plan of a BIBD $b=v=7, r=k=4$ and $\lambda=2$.
19. State and derive the relations among the parameters of a BIBD.
20. What are Lattice designs?
21. Explain briefly the linear model and analysis of Youden square design.

22. In a 2^5 factorial experiment arranged in 4 blocks each containing 8 plots, the interaction ABC, ADE and BCDE are to be confounded. Write down the treatments in the principal block. Explain also how the remaining blocks are generated.
23. Analyse the 2^2 factorial design with ANOVA table.
24. Distinguish between complete confounding and partial confounding with examples.

(8*2 = 16 weightage)

PART C

(Answer any two questions. Weightage 4 for each questions)

25. (a) Explain the blocking procedure for the fractional factorial $\frac{1}{2}(2^7)$ design in blocks 2^3 units.
(b) Illustrate with an example how you would use the Yate's algorithm for analysis fractional factorials?
26. Derive the analysis of a BIBD and show that the efficiency of this design is less than unity when compared with RBD in term of estimating simple linear treatment contrasts.
27. (a) Define split plot design. Illustrate with an example.
(b) Derive the detailed analysis of a split plot design.
28. Write short notes on the followings :-
a) Kruskal-Wallis Test
b) PBIBD
c) ANCOVA

(2*4 = 8 weightage)
