

Question Bank on Experimental Design (STAT 0511)

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1. What is experimental design? What is fixed effect and random effect model in ANOVA?
2. Write down the need for designing of experiments and the characteristics of a good design.
3. Principle of Design of Experiment (define each principle and its advantages).
4. What is treatment?
5. What is block?
6. What is experimental unit?
7. What is ANOVA? What are those assumptions involving in ANOVA
8. What is the use of t test and F test in ANOVA model
9. What is null hypothesis?
10. What is level of significance?
11. What is region of rejection (critical region)?
12. What is Experimental error?
13. What is Lattice design?
14. What are Bioassays? Direct and indirect bioassays?
15. What is degree of freedom? Formula of df for different designs.
16. What is uniformity trial?
17. What is confounding? What is partial confounding and complete confounding?
18. Why transformation of data required in data analysis of experimental design? Write the different types of data transformation methods.
19. What is factorial design? Define symmetrical and asymmetrical factorial experiments!
20. Write down Fairfield Smith Law related to shape and size of experimental plot?
21. Advantages and limitations of CRD, RBD and LSD.
22. What is the use of CRD and RBD in agriculture?
23. Difference between split plot design and strip plot design.
24. Difference between Response curve and Surfaces.
25. Explain why the sub plot factors get more importance than main plot factors in a split plot design?
26. In what situation you will recommend a strip plot experiment instead of a split plot experiment.
27. Define contrast and orthogonal contrast. Explain the Yates method of computing factorial effect totals due to different effects in 2^2 factorial experiments.
28. Write down the advantages of factorial experiments over a single factor experiment.
29. Prepare the ANOVA table for Split plot design and Strip plot design along with suitable layout.
30. What is the advantage of split and strip plot design?
31. Define the following term and mention their application
 - a) crossover designs
 - b) balanced incomplete block design
 - c) resolvable designs their applications
 - d) Lattice design
 - e) alpha design