KERALA AGRICULTURAL UNIVERSITY

B.Sc.(Hons.) Agriculture – 2007 Admission – VIth Semester
Final Examination – June - July 2010

Cat. No. : Stat 3203   Max. marks: 80
Title   : Design and Analysis of Experiments (1+1)   Time   : 3 hours

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I.   Fill up the blanks   (5 x 1 = 5)

1. In field experiments ....is necessary to obtain an estimate of experimental error.

2. Dividing the experimental area into blocks is called ....

3. In a Latin square design with 6 treatments, the degrees of freedom for error is ....

4. The degrees of freedom for sub plot error in a Split plot experiments for comparing the effects of 4 main plot treatments and 3 sub plot treatments with 4 replication is........

5. The design in which number of replication is equal to number of treatments is...............

II.   Write down the formula   (5 x 1 = 5)

6. The standard error for the comparison of difference between treatments in a CRD with unequal replications

7. Estimate of a missing observation in single unit of LSD

8. The standard error in a Latin square design with v treatments

9. The effect due to interaction in a 2^2 experiment in factors A and B

10. Angular transformation

III. Match the following (5 x 1 = 5)

	Part A		Part B
11.	CRD	a	Binomial Percentages
12.	Anova	b	Factorial Experiments
13.	Angular Transformation	c	Concomitant Variable
14.	Main effects and Interactions	d	Green house experiments
15.	Analysis of Covariance	e	Comparison of several Means

IV. State true or false. If false, correct the statement (5 x 1 = 5)

16. Soil nitrogen percentages are transformed using angular transformation.

17. A difference significant at 5% level of significance will also be significant at 1% level.

18. If block effect is significant, then blocking is effective.

19. In a split plot experiment, the factor requiring larger plots is assigned to sub plots

20. If there are 3 factors A, B and C each at 2 levels the degrees of freedom for ABC interaction is 3.

V. Answer in one word or sentence (5 x 1 = 5)

21. A method of determining minimum number of replication required in a CRD

22. The transformation for the data of **number of defective fruits counted from a fungicidal trial**

23. One test used to classify treatments into homogeneous subgroups.

24. The purpose of Uniformity trials

25. The title of Fisher and Yate's statistical tables

VI. Comment on the following statements $\qquad$ (5 x 1 = 5)

26. There is no need for calculating critical difference when treatments are not significant.

27. Error degrees of freedom will be 10 or 12 in designing any experiments.

28. In a RBD the observation in some experimental plots are missing

29. Row effect is significant but not column effect in an experiment lay out in LSD

30. Analysis of covariance is not a design but a statistical technique

VII Suggest suitable designs in the following cases. Give complete lay out plan of each experiment specifying the need for choosing particular design. Write down the skeleton analysis of variance (Source and d.f.) by taking minimum number of replications

$\qquad$ (5 x 2 = 10)

31. A laboratory experiment for comparing 6 methods of storage of Cocoa beans

32. Identification of coleus type suitable for Uplands with 10 clones

33. To study the effects 4 micronutrients Zn, Mg, Mn and Cu each at 2 levels (presence and absence) on Paddy crop

34. A field trial for comparing the effects of 5 doses of fertilizer mixture on an experimental field with fertilizer gradient acting in two directions.

35. To study the interaction effect of green Manuring with different dates of transplanting on Rice. Dates of transplanting(D): July15th(d_1); August 15th(d_2); September15th(d_3). Green Manuring(G): No Manuring(g_1); Manuring with sun hemp(g_2); Manuring with daincha(g_3)

VIII. Write short notes on (Any Five) (5 x 4 = 20)

36. Basic principles of Experimentations
37. Transformations
38. Linear Models
39. Yate's Algorithm
40. Progeny row trials
41. Compact family block design
42. Strip plot analysis

IX. Answer (any Two) of the following (2 x 10 = 20)

43. In an RBD, one observation is missing. Explain how you would estimate it. What is the consequent effect on treatment sum of squares? Describe a method of analysis of RBD data with one observation missing.

44. Describe the linear model used in the analysis from Latin square design. Based on the model explain the expressions for various sum of squares due to the sources concerned.

45. With a view to make a selection for high yielding varieties of sugarcane, a varietal trial was conducted using 8 varieties. The trial was laid out in RBD with 4 replications. At the time of harvest, the number of plants harvested for recording the yield was also noted. Explain the procedure of analyzing the yield data utilizing the information about the number of plants harvested

46. How does split plot experiment arise in practice? Give illustrations. Explain layout and analysis of Split Plot Design, with p major treatments, q minor treatments and r replications along with the CD for comparison between major and minor treatment.

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