

M.Sc.(Ag.) Examination, 2017
Semester-II
Agricultural Economics and Statistics
Course: STAT-551
(Experimental Designs)

Time : 3 Hours

Full Marks : 50

Questions are of value as indicated in the margin.

Answer *any five* questions

1. Explain the interpretation of ANOVA? Why critical difference is used in the design of experiments? 5+5=10
2. What is missing plot technique? Write the formula for one missing observation in RBD and LSD. 5+5=10
3. Explain the concept of factorial experiment and write down its advantages. Write down the set of contrasts for main effects and interactions for 2^2 -factorial and hence prove that all the contrasts are orthogonal to each other. 4+6=10
4. Explain main effects and interaction effects in a 2^2 -factorial experiment. Give Yates' algorithm for the analysis of 2^3 -factorial experiment. 5+5=10
5. If we want to test the effect of Potash (K) with three levels (None, 25kg/ha and 50kg/ha) and Phosphorus (P) with two levels (25kg/ha, 50kg/ha) on a particular crop in three replications.

Use this information to prepare layout and write the randomization process for strip-plot design. 4+6=10

6. The equation of response curve giving relation between output factor y and input factor x is

$$y = 5042.3 + 838.3x - 165.5x^2$$

Determine the economic optimum value of x . If the price of y is Rs. 2.50/- per kg and cost of x is Rs/- 5 per kg. 4+6=10

7. When and why do you recommend a split-plot design instead of a factorial experiment? Write down the complete analysis of split-plot design. 4+6=10
8. (a) What are the uses of analysis of covariance?
(b) Write down the factorial combinations for 3^2 factorial experiment. 5+5=10
