

9. Prepare an analysis of variance table for Randomized Complete Block Design (RCBD) for which the statistical model is:

$$y_{ij} = \mu + \tau_i + \beta_j + e_{ij}, \quad i = 1, 2, \dots, a; \quad j = 1, 2, \dots, b$$

10. Write down the main effect and interaction effect in 2^2 factorial design.

11. In a single factor model, $y_{ij} = \mu + \tau_i + e_{ij}$, show that

$$\sum_{i=1}^a \sum_{j=1}^n (y_{ij} - \bar{y}_{..})^2 = n \sum_{i=1}^a (\bar{y}_i - \bar{y}_{..})^2 + \sum_{i=1}^a \sum_{j=1}^n (y_{ij} - \bar{y}_i)^2$$

How this model works in design of experiment?

12. The following is partially completed ANOVA table.

Source of variation	Sum of squares	Degrees of freedom	Mean Square	F
Treatments	38.50	3		
Blocks	82.50	3		
Error	8.00			
Total	129.00	15		

Complete the ANOVA table and answer the followings:

What design was employed? How many treatments were compared? What about the total number of observations? At 5% level of significance, can we conclude that the treatments have different effects? Explain.

13. Explain the terms -factor, experimental units, treatments and confounding.

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