

Assignment of Experimental Design (MAST 2102)

Prepared by Dr. Tufleuddin Biswas

1. Give the layout of the following design
 - a) A CRD with four treatments A, B, C, and D being replicated 3,5,6, and 6 times.
 - b) A RBD with four treatments and 5 blocks
 - c) A 4X4 LSD
2. What do you mean by uniformity trial? What are the basic principles in designing an experiment? Write down the utilities of these principles in designing an experiment? Compare CRD and RBD? What should be the minimum number of replications for a randomized block design (RBD) with 3 treatments?
3. Define contrast and orthogonal contrast? Explain the Yates method of computing factorial effect totals due to different effects in 2^2 factorial experiments. Write two advantages of factorial experiments over a single factor experiment.
4. Define symmetrical and asymmetrical factorial experiments? Write down the analysis procedure of the $p \times q$ factorial experiment in RBD layout in r number of blocks.
5. Explain the idea of split-plot design along with its merit and demerits? Explain why the subplot factors get more important than the main plot factors in a split-plot design? Write the analysis procedure of a $p \times q$ split-plot design.
6. In what situation you will recommend a strip plot experiment instead of a split experiment. Write the analysis procedure of an $m \times n$ strip plot design.
7. If the i^{th} treatment in j^{th} block is missing in a randomized block design with v treatments and each treatment is replicated for r times, then how do you estimate the missing observation of the experiment also write down the analysis procedure of the above design with a single missing value. How do you estimate the standard error of differences in the experiment?
8.
 - a) In a 2^3 factorial experiment, under RBD layout with 4 replications, fill up the gaps of DF column of the ANOVA table.

Replication	A	B	AB	C	AC	BC	ABC	Error

- b) In a 2^3 factorial experiment, the table of OSD has been given below. Fill in the gaps.
The factors are A, B & C.

Yates, St. order	Treatment Totals				Factorial Effects
Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
	X ₁	Y ₁ =	Z ₁	W ₁	
	X ₂	Y ₂ =	Z ₂	W ₂	
	X ₃	Y ₃ =	Z ₃	W ₃	
	X ₄	Y ₄ =	Z ₄	W ₄	
	X ₅	Y ₅ =	Z ₅	W ₅	
	X ₆	Y ₆ =	Z ₆	W ₆	
	X ₇	Y ₇ =	Z ₇	W ₇	
	X ₈	Y ₈ =	Z ₈	W ₈	