

Indian Statistical Institute, Bangalore

M.S (QMS) First Year

Second Semester – Industrial Experimentation

Mid-Semester Exam

Duration: 2hrs

Date: 03rd March 2015

Max Marks: 50

1. Write short notes on any 3 of the following:- [3*5 = 15]
 - a. Basic principles of experimentation
 - b. Confounding in factorial experiment
 - c. Resolution III designs
 - d. Randomised block design
2. Describe the analysis of Latin square design, including the model and ANOVA table. [15]
3. An industrial engineer is conducting an experiment on eye focus time. Four different distances are of interest. He has four persons available for the experiment. Since, there are differences among individuals; he decides to conduct the experiment in a randomised block design. Analyse the data from the experiment and draw appropriate conclusions. [15]

Distance (ft)	Person			
	1	2	3	4
5	10	6	6	6
10	7	6	6	1
15	5	3	3	2
20	6	4	4	2

4. An experiment is conducted to study the effect of cutting speed and cutting angle on the life of a machine tool. The results are as follows: [15]

Cutting Speed	Cutting angle	
	45°	60°
Low	22	35
	31	34
High	32	39
	43	41

- a. Test the significance of the factors and interactions.
- b. Based on the main effect and interaction plots, what levels you recommend for this process?