

**Paper III : Analysis of Variance and Design of Experiment**

M. M. : 50

**Note :** Attempt any five questions from Section-A and any three questions from Section-B.

**Section—A**

4 × 5 = 20

1. Explain the meaning of Analysis of variance.
2. Write the assumptions for ANOVA test.
3. State some application of the analysis of variance.
4. What do you understand by 'Design of Experiment' ?
5. Describe the following three fundamental principles :  
(i) Randomisation, (ii) Replication, (iii) Local control.
6. What is Latin square design ?
7. Discuss briefly the advantages and disadvantages of Latin square design.
8. What are factorial experiment ?
9. State the advantages of a factorial experiment over a simple experiment.
10. Explain Yate's method of 2<sup>2</sup> factorial experiment with an example.

10 × 3 = 30

**Section—B**

1. Give the Linear model of one way classification and derive the analysis of variance by the method of least squares.
2. Give the layout and analysis of variance of Randomized block design. Mention the advantages and disadvantages of this design.
3. Give the layout and analysis of Latin square design. Explain why the number of treatments tested in a Latin square design short not be less than three ?
4. Discuss the analysis of a 2<sup>3</sup> factorial design in three replications.
5. Find out the main effects and interaction in the following 2<sup>2</sup> factorial experiment and write down the analysis of variance table.

		Yield		
Block		k	p.	kp
I	(i) 23	225	22	38
II	p 40	(i) 26	k 36	kp 38
III	(ii) 29	k 20	kp 30	p 20
IV	kp 34	k 31	p 24	(i) 28