

M.A./M.Sc. (Semester—II) (CBCS Scheme)
Examination
STATISTICS
Paper—VII
(Design of Experiments)

Time—Three Hours] [Maximum Marks—80

Note :— Answer either (A) or (B) from each question.

1. (A) (i) Explain the basic principles of designs of experiments.
(ii) Give complete statistical analysis of one way classified data. 6+10

OR

- (B) State and prove Gauss-Markov Theorem. 16
2. (A) (i) Explain missing plot techniques in RBD for two missing observations.
(ii) Give the layout of LSD for 4×4 treatments. State the advantages of LSD over RBD. 8+8

OR

- (B) (i) Give complete statistical analysis of RBD.
 (ii) How will you estimate one missing value in LSD ?
 10+6

3. (A) (a) Define :

- (i) BIBD
 (ii) SBIBD
 (iii) RBIBD and
 (iv) PBIBD.

- (b) Explain Youden square design. Write hypothesis to be used and ANOVA table in Youden Square Design.
 8+8

OR

- (B) (i) Explain the various parameters of BIBD. Prove that (i) $vr = bk$ (ii) $\lambda(v - 1) = r(k - 1)$, where notations have their usual meanings.

- (ii) Give complete statistical analysis of Youden Square Design.
 8+8

4. (A) (i) Explain ANOCOVA for one way classification.

- (ii) Explain ANOCOVA for two way classification.
 8+8

OR

- (B) Give complete statistical analysis of split plot design.
 16

5. (A) (i) What are factorial experiments ? Explain the situation where it could be used. State the advantages of factorial experiments over a simple experiment.

- (ii) Explain the concepts of confounding, partial confounding and complete confounding in detail.
 8+8

OR

- (B) (i) Explain Yate's Method in 2^3 factorial experiments for computing factorial effect totals.

- (ii) Differentiate between partial confounding and complete confounding. State the advantages of confounding in factorial experiments.
 8+8