

1058

B.A./B.Sc. (General)-4th Semester

Statistics

Paper-203: Sample Surveys, Design and Analysis of Experiments

Time allowed: 3 Hours

Max. Marks: 65

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

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I. Attempt the following: -

- (a) Define a Latin Square and standard latin square.
- (b) What are non-sampling errors?
- (c) Give the layout of a randomized block design.
- (d) Discuss the demerits of stratified random sampling.
- (e) What is the unbiased estimator of population mean in case of systematic sampling? (3+3+3+2+2)

UNIT - I

- II. What is a sample survey? What are the main steps involved in a sample survey? Discuss in detail. (13)
- III. Explain the method of stratified random sampling. What are the various methods of allocating sample size in stratified random sampling? Explain. (13)

UNIT - II

- IV. If the population consist of linear trend then prove that $Var(\bar{y}_{st}) \leq Var(\bar{y}_{syn.}) \leq Var(\bar{y}_n)_{SRS}$ (13)
- V.
 - (a) Discuss various advantages and disadvantages of systematic sampling in detail.
 - (b) Under what circumstances, stratified random sampling is preferred over SRS? (7+6)

UNIT - III

- VI. Perform the analysis of variance for two-way classified data with one observation per cell under the fixed effects model. (13)
- VII. Explain the method of analyzing the results of a CRD. Also give the ANOVA table. (13)

UNIT-IV

- VIII. Discuss the various advantages and disadvantages of CRD, RBD and LSD. (13)
- IX. Define the model for two way classified data with m observations per cell. Also obtain the expectation of the various sums of squares. (13)

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