

PART -A (5x3=15 marks)

Answer any FIVE questions.

Each question carries THREE (3) marks.

Each answer should not exceed ONE (1) page.

1. Explain the midzune- Sen sampling scheme.
2. Explain the Yates correction.
3. Explain the three-stage sampling with equal probabilities.
4. Explain the efficiency of cluster sampling.
5. Explain the advantages of ratio estimation.
6. Define a separate difference estimator for population mean.
7. Explain the sources and types of non-sampling errors.
8. Explain the Deming's model for the effect of call-backs.

PART_ A (4x15=60 marks)

Answer all questions.

Each question carries FIFTEEN (15) marks.

Each answer should not exceed SIX (6) pages

9. (a) Obtain Horvitz-Thomson estimator of the population mean and derive the variances of the estimator.
(b) Obtain an unbiased estimate of the population total in PPS sampling with replacement.
(OR)
- 10.(a). Explain the systematic sampling, discuss its advantages and disadvantages.
(b). Prove that the systematic sample mean is more precise than the SRSWOR under the condition to be stated by you.
- 11.(a) Obtain the variance of the sample mean for element in clusters of equal sizes.
(b) How do you determine the optimal cluster size so as to minimize the variance for a fixed cost.
(OR)
- 12.(a) Derive the variance of the estimated mean in two-stage sampling.
(b) Obtain the mean and variance of the usual two stage sampling estimator for population mean, where first and second stage units are drawn by using SRSWOR.
- 13.(a) Derive the bias and mean square error of the ratio estimator of the population total assuming SRSWOR for the units.
(b) Discuss the relative efficiency of ratio and regression estimates.
(OR)
- 14.(a) Distinguish between separate and combined regression estimators.
(b) Describe a method of using Regression estimation in stratified random sampling.
- 15.(a) Discuss Optimum allocation in double sampling.
(b) Obtain the variance of the sample mean in double sampling for stratification.
(OR)
- 16.(a) Explain multi stage and multi phase sampling. What are their applications?
(b) Explain the Hansen and Harvitz technique with suitable example.