Advanced Theory of Sample Surveys

Time: 3 Hours Maximum Marks: 80
Credit: 4 Internal Assessment Marks: 20
Total Marks: 100

Unit –I
Types of Sampling: Simple Random, Stratified Random and systematic sampling, Estimation in
Ratio and Regression estimators, (For One and two variables), Double sampling for ration and
regression estimators, double Sampling for stratification.
Unit-II
Sampling with varying probabilities, ordered and unordered estimators, Sampling Strategies due
to
Horvitz Thomson, Yales and Grundy Form Midzuno Sen, Brewerand Durbin Scheme (Sample
size
two only) Rao-Hartley, cochran Scheme for sample size n with random grouping and PPS
systematic sampling, Double sampling for PPS estimation.
Unit-III
Single stage cluster sampling: multi-stage sampling, selection of PSU's with unequal
probabilities,
Selection of PSU with replacement, stratified multi-stage sampling, Estimation of ratios, choice
of
sampling and sdub-sampling fraction, Repetitive Surveys, sampling on more than two occasions.
Unit-IV
Non-sampling errors, response errors, response bias, the analysis of data, Estimation of variance
components uncorrelated response error, response and sampling variance, the problem of
nonresponse,
some example of sources of error. Variance estimation, method Estimation of random
groups sub population. The best linear estimator two way stratification with small sample,
variance estimation in multistage sampling, sampling inspections.
Books suggested
1. Chochran, W.G. Sample Techniques
2 Desrjv and Chandok Sampling Theory
3 Singh & Chaudhary F.S. Theory and analysis of sample
Survey designs.
4 Mukhopadhyay, Primal Inter Problems in survey sampling
Note: The examiner will set two questions from each section. The students are required to
attempt five questions in all, selecting at least one question from each section.