**Concepts to Study**

1. Introduction to sampling theory
2. Population, types of population
3. Situations where sampling is inevitable
4. Sample, objectives of sampling, Sampling unit, Sampling frame
5. Principle steps in sample survey
6. Principles of sample survey
7. Sampling vs complete enumeration.
8. Limitations of sampling
9. Sampling design – 2 types
10. Size of a sample
11. Simple Random Sample
12. Sampling & Non sampling errors
13. Lottery method & random numbers method.
14. Different tables – random numbers
15. Simple random sampling without replacement
    1. Theorem 1 – the probability of selecting specified unit of the population at any given draw is equal to the probability of it at the 1st draw.
16. Notations & Terminology
    1. Theorem 2 – In SRSWOR, sample mean is an unbiased estimator of the pop mean
    2. Theorem 3 – In SRSWOR, sample mean squared error is an unbiased estimator of pop mean squared error.
    3. Theorem 4 – In SRSWOR, the variance of the sample is given by –
17. Merits & De-Merits of Simple Random Sample.
18. S.R.S.W.O.R for attributes.
19. Notations & Terminology
    1. Theorem 5 – sample proportion p is an unbiased estimate of pop proportion p.
    2. Corollary 1,2,3,4
20. Size of S.R.S for specified precision.
    1. Sample size for obtaining estimate with specified coefficient of dispersion.
    2. Sample size for given margin of error.
21. Stratified Random Sampling
22. Issues of stratification
23. Principle advantages of stratified random sampling
24. Notations & Terminology
25. Theorem 1, 2
26. Allocation of sample size – Proportional, Optimum
27. Cost Function
28. Theorem 3
29. Comparison of Stratified Random Sampling with simple random sampling = Prop. Allocation vs simple random sampling
30. Efficiency of Stratified Random sampling over Simple random sample
31. Gain in efficiency due to stratification
32. Problems
33. Efficiency of Neyman’s allocation over proportional allocation & simple random sampling.
34. Theorem 4
35. Problems
36. Determination of no. of strata
37. Systematic sampling
38. Notations & terminology
39. Variance of the estimated mean.
40. Efficiency of systematic random sampling & simple random sampling.
41. Proof – sys. Random sample for intra – class correlation.
42. Efficiency of systematic sampling vs Simple Random Sampling
43. Systematic sampling vs stratified random sampling
44. Stratum mean squared error
45. Pooled M.S.E between units within strata
46. Systematic sampling in presence of general linear trend
47. Merits & demerits of systematic sampling
48. Circular Systematic sampling
49. Cluster Sampling
50. Area Sampling
51. Conditions under which cluster sampling is used.
52. Construction of clusters
53. Notations & terminologies in case of equal clusters
54. Estimation of population mean
55. Relative efficiency of cluster sampling over S.R.S.W.O.R
56. Optimum cluster size
57. Official statistics