K19U 2278

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS- Reg./Sup./Imp.)

Examination, November-2019

(2014 Admn. Onwards)

Core Course in Statistics

5B 08 STA: SAMPLING TECHNIQUES

Use of calculators and Statistical tables are permitted

Time : 3 Hours Max. Marks : 48

PART - A (Short answer)

Answer **all** the **6** questions. **(6×1=6)**

1. Define the term sample with an example.
2. Distinguish between Random sampling and Purposive sampling.
3. What are the advantages of taking samples from a population?
4. Distinguish between sample mean and the population mean.
5. What is meant by a sampling design?
6. Give the names of important government organizations and institutes for carrying out the statistical related works in India.

PART - B (Short essay)

Answer any **7** questions. **(7×2=14)**

7. Show that under simple random sampling sample total is an unbiased estimator of population total.
8. Define cost function with an example.
9. Distinguish between sampling error and Non sampling error.
10. Explain the method of selecting a systematic sample.

P.T.O.

11. What are the merits and demerits of simple random sampling?
12. Describe proportional allocation.
13. Find the variance of the estimate of population mean in stratified random sampling.
14. Distinguish between parameter and estimate.
15. Explain two practical situations where census method is not possible.

PART - C (Essay)

Answer any **4** questions. **(4×4=16)**

16. Explain the idea of the following sampling methods with example
    i) Linear systematic sampling
    ii) Circular systematic sampling
17. What is cluster sampling? Obtain the variance of the estimate of population total in cluster sampling.
18. Explain the advantages of stratified random sampling.
19. Find the variance of sample mean under SRSWOR.
20. Explain PPS sampling.
21. Find the variance of estimate of the sample mean under optimum allocation.

PART - D (Long essay)

Answer any **2** questions. **(2×6=12)**

22. Explain the different methods of allocation of stratum sample size in Stratified random sampling.
23. a) Discuss the basic principles of sample survey.
    b) What are the different sources of errors in sample survey?

24. With a cost function $c = a + \sum_{i=1}^{k} c_i n_i$, a is the overhead cost c_i is the cost per unit in the i[th] stratum, prove that the variance of the estimated mean $\bar{y}_{st}$ is minimum when n_i is proportional to $\frac{N_i S_i}{\sqrt{c_i}}$, N_i is the number of sampling units and S_i^2 is the population mean square in the i^{th} stratum.
25. Explain about the official statistical system in India.

———————