

Reg. No. : .....

Name : .....

V Semester B.A./B.Sc./B.Com./B.B.A./B.B.A.T.T.M./B.B.M./B.C.A./B.S.W./  
 B.A. Afsal UI Ulama Degree (CCSS – Reg./Supple./Improv.)  
 Examination, November 2012  
 CORE COURSE IN STATISTICS  
 5B08 STA : Sampling Techniques

Time: 3 Hours

Max. Weightage : 30

**Instruction : Use of calculator and statistical tables permitted.**

## PART – A

Answer **any 10** questions. Weightage **1 each**.

1. State any four advantages of sampling over census.
2. Distinguish between sampling and non-sampling errors.
3. Distinguish between response and non-response bias.
4. Explain probability sampling.
5. In the lottery method of selecting simple random sample, show that the probability of selecting a unit of the population at any stage is equal to  $\frac{1}{N}$ .
6. Distinguish between simple random sampling with replacement and without replacement.
7. Define stratified random sampling.
8. Define circular systematic sampling.
9. What are the advantages of cluster sampling ?
10. In cluster sampling with equal cluster size, show that the sample mean is unbiased for the population mean.
11. Write a very short note on NSSO. (10×1=10)

## PART – B

Answer **any 6** questions. Weightage **2 each**.

12. What are the important sources of non sampling errors ?
13. Discuss any two methods of selecting simple random samples.

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14. In SRS WOR, show that the sample mean square is an unbiased estimate of the population mean square.
15. With usual notations prove that  $V(p) = \frac{N-n}{N-1} \frac{PQ}{n}$
16. Derive the variance of the estimate of the population mean under proportional allocation of sample sizes.
17. With usual notations prove that  $V(\bar{y}_{st}) \leq V(\bar{y})$ .
18. Compare the efficiencies of simple random sampling and cluster sampling.
19. Explain in Lahiri's method of selecting PPS sample.
20. Write a short note on Indian statistical institute. (6×2=12)

### PART – C

Answer **any two** questions. Weightage **4 each**.

21. Discuss the important steps in a large scale sample survey.
22. In stratified sampling, derive the variance of the estimated mean in optimum allocation with fixed sample size.
23. In systematic sampling, derive the variance of the estimate of the population mean in terms of the intra class correlation coefficient.
24. Discuss the role of the institutions NSSO, CSO and ICMR in the planning and development process of the nation. (2×4=8)