

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

B.Sc.Statistics - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - VI

20USTCT6013 - Sampling Methods

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Explain about Pilot survey.
2. Distinguish between SRSWR and SRSWOR.
3. In stratified random sampling prove that, $V(\bar{Y}_{st}) = \sum_{i=1}^k W_i^2 \frac{s_i^2}{n_i}$.
4. In systematic sampling prove that, $\text{Var}(\bar{y}_{sys}) = \frac{N-1}{N} S^2 - \frac{k(n-1)}{N} S_{wsy}^2$
5. Discuss about the variance of the ratio estimate.
6. Explain the advantages of sampling over complete census
7. Explain about the principal advantages of stratified random sampling.
8. Show that in SRSWOR, the sample mean is an unbiased estimator of population mean.

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Explain about the principal steps involved in sampling survey also explain about non- sampling errors.
10. In SRSWOR prove that, $V(\bar{y}_n) = \frac{N-n}{N} \cdot \frac{S^2}{n}$.
11. Estimate the gain in precision of stratified sampling.
12. Discuss and compare simple and stratified with systematic random sampling.
13. Explain (i) Cumulative method
(ii) Lahiri's method.
