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. END SEMESTER EXAMINATIONS NOVEMBER-2022
SEMESTER - VI
13USTCT6013 - Sampling Techniques

Total Duration : 2 Hrs 30 Mins.   **Total Marks : 60**

Section A

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

1. Discuss briefly the basic principles of a sample survey.
2. In SRSWOR, prove that the sample mean is unbiased estimator of population mean.
3. Derive any two properties of sample mean in SRSWR.
4. Explain the advantages and disadvantages of systematic sampling.
5. Under what condition ratio estimator is an efficient as regression estimator.
6. Explain Sampling errors and Non-sampling errors.
7. Explain "Lottery Method" and Random Number Table Method of unit selection.
8. Explain cumulative total method of PPS selection.

Section B

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

9. Explain how you prepare schedules and questionnaires.
10. Write a note on simple random sampling of attributes.
11. Prove that in stratified random sampling, sample mean is unbiased estimator of population mean. Also find its variance.
12. With usual notations, prove that $V(\overline{y})_{st} \leq V(\overline{y})_{sys} \leq V(\overline{y}_R)$
13. Derive the variance of Hansen-Hurtvitz estimator for population total in PPS sampling.

*****

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. END SEMESTER EXAMINATIONS NOVEMBER-2022
SEMESTER - VI
13USTCT6013 - Sampling Techniques

Total Duration : 2 Hrs 30 Mins.   **Total Marks : 60**

Section A

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

1. Discuss briefly the basic principles of a sample survey.
2. In SRSWOR, prove that the sample mean is unbiased estimator of population mean.
3. Derive any two properties of sample mean in SRSWR.
4. Explain the advantages and disadvantages of systematic sampling.
5. Under what condition ratio estimator is an efficient as regression estimator.
6. Explain Sampling errors and Non-sampling errors.
7. Explain "Lottery Method" and Random Number Table Method of unit selection.
8. Explain cumulative total method of PPS selection.

Section B

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

9. Explain how you prepare schedules and questionnaires.
10. Write a note on simple random sampling of attributes.
11. Prove that in stratified random sampling, sample mean is unbiased estimator of population mean. Also find its variance.
12. With usual notations, prove that $V\left(\overline{y}\right)_{st} \leq V\left(\overline{y}\right)_{sys} \leq V\left(\overline{y}_R\right)$
13. Derive the variance of Hansen-Hurtvitz estimator for population total in PPS sampling.

*****