LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **STATISTICS**

THIRD SEMESTER – NOVEMBER 2012

# ST 3504/3502/4500 - BASIC SAMPLING THEORY

 Date : 05/11/2012 Dept. No. Max. : 100 Marks

 Time : 9:00 - 12:00

**PART – A**

Answer **ALL** thequestions **(10x2=20 Marks)**

1. What is meant by sampling frame?
2. What is pilot survey?
3. Define simple random sampling with replacement.
4. Define unbiased estimator of a parameter.
5. Distinguish between SRSWR and SRSWOR.
6. Explain stratified random sampling.
7. Write any two advantages of stratified sampling.
8. Define Lahiri’s method.
9. Define linear systematic sampling.
10. Write down the merits of systematic sampling.

**PART – B**

Answer any **FIVE** questions **(5x8=40 Marks)**

1. What are the advantages of sampling over census method?
2. List out the dangers in using statistical packages.
3. Derive any two properties of sample mean in SRSWR.
4. Prove that in stratified sampling, sample mean is an unbiased estimator of population mean.

Also find its variance.

1. Write a descriptive note on cluster sampling.
2. Explain ‘Lottery Method’ of selecting a simple random sample.
3. Explain the advantages and disadvantages of systematic sampling.
4. Explain cumulative total method of PPS selection.

**PART – C**

Answer any **TWO** questions **(2x20=40 Marks)**

1. (a) What are non-sampling errors? Explain its sources.

(b) Write a note on simple random sampling of attributes.

1. (a) If the population consists of linear trend, then prove that

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(b) Compare 

1. (a) Derive the variance of unbiased estimator for mean per element under cluster sampling in

 terms of the intra cluster correlation.

(b) Prove that is unbiased for in SRSWOR.

22. Define systematic sampling. Obtain the sampling variance of the mean and

 compare with that of SRSWOR and stratified sampling.

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