



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION - STATISTICS

THIRD SEMESTER – NOVEMBER 2015

ST 3505/3504/3502/4500 - SAMPLING THEORY

Date : 04/11/2015
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL the Questions:

(10 x 2 = 20 marks)

1. Define sample and sample size.
2. State the limitations of sampling techniques.
3. Define probability sampling.
4. Define Simple random sampling.
5. What do you mean by Stratification?
6. Define Systematic sampling.
7. What is sampling Interval?
8. Define Circular Systematic sampling.
9. Define Regression Estimator.
10. What is Bias of Ratio Estimator?

PART – B

Answer any FIVE Questions:

(5 x 8 = 40 marks)

11. Explain the basic principles of Sample survey.
12. Discuss the advantages of sampling techniques over complete census.
13. Distinguish between Sampling and Non-sampling Errors.
14. State the advantages and disadvantages of systematic sampling.
15. Show that in SRSWOR, the sample mean is an unbiased estimate of the population mean.
16. Discuss the superiority of regression estimator over ratio estimator.
17. Derive the expression for the bias of the ratio estimator.
18. Explain the principal advantages of Stratified Random Sampling.

PART – C

Answer any TWO Questions:

(2 x 20 = 40 marks)

19. a) Describe the principal steps involved in a sample survey.
b) Prove that in SRSWOR, $Var(\bar{y}_n) = \left(\frac{1}{n} - \frac{1}{N}\right)S^2$.
20. a) Explain the various allocations that are commonly used in Stratified Random Sampling.
b) Write a note on Simple Random Sampling of Attributes.
21. Prove that $Var(\bar{y})_{st} \leq Var(\bar{y})_{sys} \leq Var(\bar{y})_{ran}$.
22. a) Derive the linear regression estimates
 - i) With pre assigned 'b'
 - ii) When 'b' is composed from the sample.b) Explain the merits and demerits of Simple random sampling.

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