Syllabus of Statistics

Theory of Estimation and Sampling Survey

Credits: 04	Course Code: B060301T	Sem. III
	External Max. Marks 75	Internal Max. Marks. 25

Part –A: Sampling Survey

Unit	Topic	No. of Lectures
I	Types of population, Sample, Principal Steps in Sample Survey, Benefit of Sampling Survey, Sampling vs. Complete enumeration: Sampling units and Sampling frame, Precision and efficiency of estimators, Types of Sampling Methods: Probability Sampling, Non-Probability Sampling: Convenience, Purposive, Quota, Voluntary and Snowball Sampling.	06
II	Simple Random sampling with and without replacement, Use of random number tables in selection of simple random sample, Estimation of population mean and proportion, Derivation of expression for variance of these estimators, Estimation of variances.	08
III	Stratified random sampling, Problem of allocation proportional allocation, optimum allocation, Derivation of the expressions for the standard error of the usual estimators when these allocations are used. Comparison between SRS & Stratified Sampling in terms of Variance	08
IV	Systematic Sampling: Estimation of Population mean and Population total. Standard errors of these estimators.	08

Part- B: Sampling Distributions and Theory of Estimation		
V	Sampling Distributions: The concept of sampling distribution, Parameter, Statistics and Standard error. The sampling distribution for the sum of independent random variables of Binomial, Poisson and Normal distributions.	04
VI	Central limit theorem (Statement only), Sampling distribution, of Z, t, F, and chi-square without derivations Simple properties of these distributions and their interrelationship.	08
VII	Point estimation: Characteristics of a good estimator: Unbiasedness, consistency, sufficiency and efficiency. Problems and examples, Interval estimation.	10
VIII	Method of Maximum Likelihood and properties of maximum likelihood estimators (without proof), Method of least squares and methods of moments for estimation of parameters.	08