

PAPER - II
SAMPLING DISTRIBUTIONS AND
ELEMENTS OF ESTIMATION

Format : The question paper will be divided into three sections A, B and C as follows

Section A : In this section, ten questions will be set. Each question will be of short answer type not exceeding 20 words and will carry 1/2 mark. The candidate will be required to attempt all the questions (aggregating 5 marks).

Section B : In this section, ten questions will be set. Each question will be of 5 marks. The candidate will be required to attempt five questions in all taking one question from each unit (aggregating 25 marks).

Section C : In this section, four questions will be set covering all the five units and whose answers will not exceed 500 words or five pages each. Each question may have sub parts in it and will carry 10 marks. The candidate will be required to attempt any two questions (aggregating 20 marks).

UNIT I

Univariate Sampling Distributions: Concept of random sampling, statistic and sampling distribution. Concept of standard error of an estimate. Standard errors of sample mean, sample proportions. Sampling distributions

distribution of sum of Binomial; Poisson and mean of Normal distribution, Chi-square distribution its derivation, properties and problems.

UNIT II

t, F, and Z sampling distributions with their derivations, properties and inter-relationships with Chi-square distribution.

UNIT III

Elements of Point Estimation: Concept of point estimation, properties of point estimators such as consistency, unbiasedness, efficiency and simple notion of sufficiency, Factorization theorem (without proof).

UNIT IV

Bias, Mean Square error, variance and relation among them of an estimator, Minimum variance unbiased estimator and its properties (excluding, Cramer-Rao inequality) and problems on them.

UNIT V

Interval Estimation: Concept of interval estimation, confidence interval and confidence coefficient. Confidence interval for mean and variance in case of normal population.

Definition of order Statistic and sampling distributions of median and range from any uni-variate population.