

M.Sc. STATISTICS
SEMESTER-1

WITH EFFECT FROM 2006-2007 ADMITTED BATCH OF STUDENTS

Paper - 1.3: ESTIMATION THEORY

UNIT I; Point Estimation: Concepts of Unbiased ness, Consistency, minimum variance unbiased estimation, Information in a sample, Cramer-Rao inequality, efficiency of an estimator, Chapman-Robin's inequality and Bhattacharya bounds, definition of CAN estimator.

UNIT II; Concept of sufficiency, single parameter and several parameter cases. Fisher-Neyman Factorization theorem, Minimal sufficient statistic, exponential families and Pitman families. Invariance property of sufficiency under 1 - 1 transformation of sample space & parameter space.

UNIT III : Distributions admitting sufficient Statistics, Rao-Blackwell Theorem, Completeness Lehman-Scheffe Theorem, joint sufficiency (regular case).

UNIT IV: Method of maximum likelihood, CAN estimators for one-parameter Cramer family. Cramer-Huzurbazar theorem, Solution of likelihood equations, Method of scoring. Connection between MLE's and efficient estimators MLEs & sufficient estimatoers.

UNIT V: Censored and truncated distributions: Type 1 and Type 2 Censoring for normal and exponential distributions and their MLE's. Interval estimation: Confidence Intervals, using pivots; shortest expected length confidence intervals.

Text Books:

Goon, A.M., Gupta, M.K., Das Gupta, B.: An Outline of Statistical Theory
Volume - II, The World Press Pvt. Ltd., Calcutta.

Rohatgi, V. (1998): An Introduction to Probability and Mathematical Statistics, Wiley
Eastern Ltd., New Delhi.

Kale, B.K.(1999): A First Course on Parametric Inference, Narosa Publishing house.

References:

Lehmann, E.L. (1986): Theory of Point Estimation.

Rao, C.R. (1973): Linear Statistical Inference.

Dudewicz, E.J. and Mishra, S.N. (1988) Students' Edition. Modern Mathematical
Statistics. Wilev, Intli.student addition.

Lawless, J.F: Statistical Models and Methods for Lifetime Data, John Wiley & Sons.

*** PLEASE SET TWO DIFFERENT
QUESTION PAPERS.**

*** KINDLY ADHERE TO THE
SYLLABUS STRICTLY.**