B.A/B. Sc-II Semester-III

Paper-I (ST-301)

Time: 3 Hours

M.M.:B. Sc: 40+10*
B.A: 28+7*
* Internal Assessment

Elementary Inference

Note : There will be nine questions in all. Question No.1 will be compulsory covering whole of the syllabus and comprising 5 to 8 short answer type questions. Rest of the eight questions will be set from the four units uniformly i.e. two from each unit. The candidate will be required to attempt five questions in all selecting one question from each unit and the compulsory one. All the questions will carry equal marks except the compulsory question, the distribution of marks for which will be as follows:-
B.Sc.8 marks and B.A. 6 marks.

UNIT-I

Statistical Estimation : Parameter and statistic, Basic concept of sampling distribution. Point and interval estimate of a parameter, concept of bias and standard error of an estimate. Standard errors of sample mean, sample proportion, standard deviation, Properties of a good estimator: Unbiasedness, Efficiency, Consistency and Sufficiency (definition and illustrations).

UNIT-II

Methods of Estimation : Method of moments, method of maximum likelihood and its properties (without proof). Estimation of parameters of Binomial, Poisson and Normal distributions

UNIT-III

Testing of Hypotheses : Null and alternative hypotheses. Simple and composite hypotheses, critical region, level of significance, one tailed and two tailed testing, Types of errors, BCR, Neyman- Pearson Lemma, Test of simple hypothesis against a simple alternative in case of Binomial, Poisson and Normal distributions.

UNIT-IV

Large Sample Tests : Testing of a single mean, single proportion, difference of two means and two proportions. Fisher's Z transformation. Determination of confidence interval for mean, variance and proportion.

Books recommended

S. No.	Title of Book	Name of author	Publisher
1.	Statistics:A Foundation For Analysis	Hughes A. & Grawoig D.	Addision Wesley
2.	A First Course on Parametric Inference	Kale B.K.	Narosa
3.	Introduction to Theory of Statistics	Mood A.M., Graybill F.A. & Boes D.C.	McGraw Hill
4.	Introduction to Mathematical Statistics	Hoel P.G.	Asia Pub. House
5.	Mathematical Statistics With Applications	Freund's J.E.	Prentice Hall
6.	Introduction to Mathematical Statistics	Hogg and Craig	Prentice Hall

B.A/B. Sc-II Semester-III

Paper-II (ST-302)

Time: 3 Hours M.M.:B. Sc: 40+10*
B.A: 28+7*
* Internal Assessment

Sample Surveys

Note : There will be nine questions in all. Question No.1 will be compulsory covering whole of the syllabus and comprising 5 to 8 short answer type questions. Rest of the eight questions will be set from the four units uniformly i.e. two from each unit. The candidate will be required to attempt five questions in all selecting one question from each unit and the compulsory one. All the questions will carry equal marks except the compulsory question, the distribution of marks for which will be as follows:-
B.Sc.8 marks and B.A. 6 marks.

UNIT-I

Concepts of census and sample survey, basic concepts in sampling. Sampling and Non-sampling errors. Principal steps involved in a sample survey; bias, precision and accuracy, advantages of sampling over complete census, limitations of sampling, different methods of data collection.

UNIT-II

Basic sampling methods: S imple random sampling (SRS) with and without replacement, use of random number tables, estimation of mean and variance in case of SRS. Simple random sampling of attributes, size of simple random sample.

UNIT-III

Stratified random sampling, estimation of population mean, variance of the estimate of population mean in stratified random sampling, allocation of sample size, proportional allocation, optimum allocation. Comparison of Stratified random sampling with SRS.

UNIT-IV
S ystematic random sampling, estimation of mean and variance. Comparison of
S ystematic random sampling with SRS and Stratified random sampling.

Books recommended

S. No.	Title of Book	Name of author	Publisher
1.	Sampling Techniques	Cochran W.G.	Wiley Publishers
2.	Sampling Theory	Des Raj and Chandok	Narosa

3.	Sample Theory of Surveys with Applications	Sukhatme et. all	Lowa State Uni. Press & IARS
4.	Survey Sampling	Mukhopadhyay P.	Narosa Publishing Society
5.	Sampling Techniques	Daroga Singh & Chaudhry, F.S	New age International