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

Paper-I (ST-401)

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

Parametric and Non-parametric tests

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

Chi- square distribution : Definition, derivation, moment generating function, cumulant generating function, mean, mode, skewness, additive property, conditions for the validity, chi- square test for goodness of fit. Contingency table, coefficient of contingency, test of independence of attributes in a contingency table.

UNIT-II

Student's 't' and Snedecor's 'F' statistics: Definition and derivation of Student's 't', constants of t- distribution, limiting form of t- distribution. Definition & derivation of Snedcor's F-distribution, constants of F-distribution, mode of F-distribution. Relationship between t, f and chi-square distribution.

UNIT-III

Testing for the mean and variance of univariate normal distribution, testing of equality of two means and testing of equality of two variances of two univariate normal distributions. Testing for the significance of sample correlation coefficient in sampling from bivariate normal distribution.

UNIT-IV

Nonparametric Tests: Definition of order statistics. Sign test for univariate and bivariate distribution, run test, median test, Kolmogorov- Smirnov one sample test, Kolmogorov-Smirnov two sample test, Mann Whitney U-test (only applications without derivation).

Books recommended

S. No.	Title of Book	Name of author	Publisher
1.	Introduction to Probability and Its Application	Feller W.	Wiley Publisher
2.	Fundamentals of Statistics, Vol. I	Goon A.M., Gupta & M.K. Dasgupta B.	World Press Calcutta
3.	Random Variable and Probability Distribution	Cramer H.	Cambridge Uni. Press
4.	Fundamentals of Mathematical Statistics	Gupta S.C. & Kapoor V.K.	Sultan Chand & Sons
5.	Practical Nonparametric	W.J. Conover	Wiley Publisher