M.Com. Part I
Satatistics : Paper I (Principal Subject)

(To be made effective From , June - 2006]

Course Contents

Unit I : Mathematical Statistics & Distribution Theory : 25%

Cumulant generating function, Definition of characteristic function and its properties without proof. Statement of inversion theorem (without proof) on characteristic function, their uses for binomial, Pisson and normal distributions.

Multinomial distribution, Uniform, Exponential, Gamma and Log normal distributions. χ^2 , t, F distributions - Statement of p.m.f / p.d.f with derivation of their mean and variance.

Unit II : Estimation Theory & Methods of Estimation : 25%

Concept and definition of an estimator and estimate. Unbiasedness, efficiency and consistency of estimators. Statement of Cramer - Rao inequality without proof, Minimum variance bound unbiased estimator and its uniqueness Definition of a sufficient statistic and statement of factorisation theorem - examples.

Method of moments and maximum likelihood, Properties of the maximum likelihood estimators without proof.

Unit III : Testing of Statistical Hypothesis : 25%

Statement of a statistical hypothesis, Simple and composite hypothesis, Two types of errors. Critical region, Power function and power of a test, Definition of probability of type I & type II errors, Statement of Neyman-Pearson lemma for non-randomised test for testing a simple null against a simple alternative, Definition of likelihood ratio rest and properties without proof, Definition of a sequential probability ratio test (SPRT), its o.c. and ASN functions.

Unit IV : Design of Experiment : 25%

Efficiency of RBD over CRD and LSD over RBD. Factorial designs, Confounding in factorial designs. Partial confounding, advantages and disadvantages of confounding . Analysis of 2^2 & 2^3 designs by Yates' method, Balanced Incomplete Block Design, Efficiency of B.I.B.D relative to RBD.

Books for Reference :

1. Rohatgi V.R.(1984) : Introduction to prob. Theory and Mathematical Statistics (Wiley Eastern)
2. Goon, Gupta and Dasgupta(1970) : An outline of Statistical Theory Vol. I & II (World Press, Calcutta)
3. S.C.Gupta and V.K.Kapoor(1990) : Fundamentals of applied Statics (Sultanchand and Sons)
4. Jaiswal M.C. (1972) : Statistical Distributions (In Gujarati), Guj. University, A'bad
5. Mohse-Beh-Horim and Levy H.(1984) : Statistical Decision and applications in business and Economics McGraw Hill)
6. Meyer P.L. (1970) : Introduction to Probability and Statistical Applications (Addison - Wesley)
7. Hogg and Craig (1978) : Introduction to Mathematical Statistics (Collier - M)
8. Feller W. : Introduction to Prob. Theory And applications Vol Eastern)