Bharathiar University-Coimbatore 641046
B.Sc.-Statistics –Major

Allied Subject: Mathematics for Statistics-Paper I

Unit I: Matrices and Determinants
Definition of matrices-order of matrix-types of matrices-matrix operations-Addition, scalar multiplication, multiplication of matrices, transpose, conjugate, symmetric, skew symmetric, Hermitian and skew Hermitian matrix-Definition of Determinants and value of determinants of order 2 and 3- Adjoint and inverse of a matrix-Solution of system of simultaneous linear equations by using inversion of matrix and cramers rule methods

Unit II:
Rank of a matrix-Rank through elementary transformations-Consistency and inconsistency of system of simultaneous linear equations.
Eigen values and Eigen vectors-Characteristics polynomial and equations-cayley Hamilton theorem(statement only)-Inverse of a matrix by using Cayley Hamilton theorem-verification.

Unit III: Theory of Equations
Relation between roots and co-efficients of cubic and bi-quadratic equations(excluding symmetric function of roots)-Reciprocal equations-Increase and decrease the roots of a given equations-Descarte’s rule of signs.-Horner’s methods.

Unit IV: Differential Calculus

Unit V: Integral Calculus
Introduction-Integration techniques-Integrals of f(x), f(ax+b), f(x)+g(x)- Method of Substitution- f ’(x)/f(x), f ’(x)/ f(x), f ’(x)[f(x)]^n-Integration by parts. Evaluation of Integrals of the form –Integrals 1/(ax^2+bx+c), 1/(ax^2+bx+c), px+q/(ax^2+bx+c), px+q/(ax^2+bx+c). Definite integrals –Simple problems.

Text Books:
1. Matrices by A.R. VASISHTA(Krishna prakashan mandir (P) Ltd. Meerut)
2. Classical Algebra by T.K.MANICAKAVACHAGOM PILLAI and others(S.Viswanathan printers and publishers PVT Ltd.)
3. CALCULUS by T.K.MANICAKAVACHAGOM PILLAI and others(S.Viswanathan printers and publishers PVT Ltd.)

References:
1. Matrices by SHANTI NARAYANAN(S.CHAND & CO).
2. Classical Algebra by KANDASAMY, THILAGAVATHY and others(S.Chand &Co)
3. CALCULUS by KANDASAMY, THILAGAVATHY and others(S.Chand &Co)
B.SC.-STATISTICS –MAJOR

ALLIED SUBJECT: MATHEMATICS FOR STATISTICS-PAPER II

UNIT I: PARTIAL DIFFERENTIATION
Partial Derivatives-Euler’s Theorem for homogenous functions-verification of euler's theorem

UNIT II: Laplace transforms-Inverse Laplace transforms(Excluding Solution of ODEs)

UNIT III: Fourier Series-Expansion of Fourier series of a function with period 2\(\pi\)-Odd and even functions-Half range Fourier series.


UNIT V: Series –Convergence –Bionomial, Exponential and Logarithmic-Problems related to Summation only (Proof not required).

TEXT BOOKS:
1. Elementary Real Analysis by A.R.VASISHTA(Krishna prakashan mandir (P) Ltd. Meerut)
2. Real Analysis by T.NSHARMA and A.R.VASISTHA(Krishna prakashan mandir (P) Ltd. Meerut.
3. CALCULUS by T.K.MANICAKAVACHAGOM PILLAI and others(S.Viswanathan printers and publishers PVT Ltd.)

REFERENCES:
1. Method of real analysis by Rd.R.GOLDENBERG(Oxford and IBM)
3. CALCULUS by KANDASAMY, THILAGAVATHY and others(S.Chand &Co)