

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 crammers 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

Limit of a function-continuity of a function-concept of differentiation –Differentiation techniques –product rule-quotient rule-Chian rule-Dderivative of a inverse function-Logarithmic differentiation-Method of substitution-Differentiation of parametric functions-Differentiation of implicit function –Second order derivatives.

UNIT V: INTEGRAL CALCULUS

Introduction-Integration techniques-Integrals of $f(x)$, $f(ax+b)$, $f(x)+g(x)$ - Method of Sustitution- $f'(x)/f(x)$, $f'(x)/f(x)$, $f'(x)[f(x)]^n$ -Integration by parts. Evaluation of Integrals of the form –Interals $1/(ax^2+bx+c)$, $1/(ax^2+bx+c)$, $px+q/(ax^2+bx+c)$, $px+q/(ax^2+bx+c)$. 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 eulers 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 2π -Odd and even functions-Half range Fourier series.

UNIT IV: Sets and functions-Properties of real numbers-Supremum and infimum-Neighbourhood of a point –Limit points of a set-Sequences-subsequences-Convergent and divergent sequence-Limit point of sequence-Cauchy general principal of convergence.

UNIT V: Series –Convergence –Binomial, 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)
2. Principles of Mathematical Analysis by WALTER RUDIN(McGraw Hill Publishing Company)
3. CALCULUS by KANDASAMY, THILAGAVATHY and others(S.Chand &Co)