

## THIRUVALLUVAR UNIVERSITY

### B.Sc. MATHEMATICS SYLLABUS CBCS PATTERN (For the candidates admitted from 2017 - 2018)

#### SEMESTER I

#### PAPER - 1 ALGEBRA

**Objectives** In this Course students are exposed to topics like Theory of Equations, Summation of Series, Matrices, Continued Fractions and Elementary Number Theory. The stress is on the development of problem solving skills.

**UNIT-I: THEORY OF EQUATIONS** Polynomial Equations - Symmetric Functions of roots in terms of Coefficients - Reciprocal Equations - Transformation of Equations.

**UNIT-II: THEORY OF EQUATIONS (Contd...)** Descartes Rule of Signs - Approximate Solutions of Polynomials by Horner's method - Newton - Raphson method of Solution of a Cubic Polynomial.

**UNIT-III: SUMMATION OF SERIES** Summation of series using Binomial - Exponential and Logarithmic series (Theorems without proofs) - Approximation using Binomial & Exponential series and logarithmic series simple problems.

**UNIT-IV: MATRICES** Symmetric - Skew symmetric, - Hermitian - Skew Hermitian - Orthogonal and Unitary Matrices - Cayley-Hamilton Theorem (without proof) - Eigen Values - Eigen Vectors–Similar Matrices - Diagonalisation of a Matrix.

**UNIT-V: ELEMENTARY NUMBER THEORY** Prime Number - Composite Number - Decomposition of a Composite Number as a Product of Primes uniquely (without proof) - Divisors of a Positive Integer - Congruence Modulo  $n$  - Euler Function (without Proof) - Highest Power of a Prime Number  $p$  contained in  $n!$  - Fermat's and Wilson's Theorems (statements only) - simple problems.

**Recommended Texts** T.K.ManicavachagomPillay, T.Natarajan and K.S.Ganapathy.(2004) *Algebra*, Volume I & II S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.

#### Reference Books

1. P.Kandasamy, K.Thilagavathy (2004), Mathematics for B.Sc. Vol-I, II, III & IV, S.Chand& Company Ltd., New Delhi-55.
2. S.Arumugam (2003) *Algebra*. New Gamma Publishing House, Palayamkottai.
3. A.Singaravelu (2003) *Algebra and Trigonometry*, Vol.-I & II Meenakshi Agency, Chennai.
4. S.Sudha(1998) *Algebra and Trigonometry*. Emerald Publishes, Chennai.