

Semester-I
Course: B.Sc. (Hons) IT
Paper Code: BSIT-102

Nomenclature: Mathematical foundations for Information Technology-I

Max. Marks: 40+10

Time: 3hrs.

UNIT-I

Matrix Algebra:- Rank of Matrix, Eigen vectors, Characteristic equation, Diagonalization.

UNIT-II

Differential Equations:- Formation of differential equations, , ordinary Differential equations of the first order and degree, exact equation, Linear equations of higher order with constant coefficient, Homogenous linear equations.

UNIT-III

Sets and Propositions:- Introduction, combination of sets, Finite and infinite sets, uncountably, Mathematical induction, principle of inclusion and exclusion, multisets, properties of binary relations.

UNIT-IV

Relations and Functions:-

Equivalence relations and partitions, partial relations, functions and pigeon Hole Principle, Propositions.

Reference Books:

1. Discrete Mathematics by R.C.Joshi
2. Calculus and Differential Equation by Jevason's publications for B.Sc I
3. Algebra and Trigonometry by Jevason's publications for B.Sc I

Note:

1. Syllabus in each Theory Paper is divided in 4 units.
 - I. A Student is required to attempt 5 questions in all.
 - II. Question No 1 is compulsory, consisting of short answer type questions based on all the 4 units.
 - III. Two questions will be set from each unit. A student is required to attempt one question from each unit.
 - IV. All questions carry equal marks.
2. Use of simple calculator is permissible.
3. Instructions should be imparted using SI system of units. Familiarity with CGS system of units should also be ensured.
4. Distribution of Marks: $40+10=50$.
 - * Each question paper will be of 40 marks and 10 marks in each theory paper are awarded through internal assessment in each semester.
5. Work load – 3 periods per week per theory paper.