Discrete Mathematical Structures syllabus for CS 3 Sem 2017 scheme | VTU CBCS 17CS3(Syllabus

VTU Syllabus CS 2017 Scheme 3 SEM Discrete Mathematical Structures

Module-1	Fundamentals of Logic	10 hours

Fundamentals of Logic: Basic Connectives and Truth Tables, Logic Equivalence – The Laws of Logic, Logical Implication – Rules of Inference. Fundamentals of Logic contd.: The Use of Quantifiers, Quantifiers, Definitions and the Proofs of Theorems,

Module-2	Properties of the Integers	10 hours

Properties of the Integers: Mathematical Induction, The Well Ordering Principle – Mathematical
Induction, Recursive Definitions. Principles of Counting.

Fundamental Principles of Counting: The Rules of Sum and Product, Permutations, Combinations – The Binomial Theorem,
Combinations with Repetition,.

Module-3	Relations and Functions	10 hours

Relations and Functions: Cartesian Products and Relations, Functions – Plain and One-to-One, Onto Functions. The Pigeon-hole Principle, Function Composition and Inverse Functions. Properties of Relations, Computer Recognition – Zero-One Matrices and Directed Graphs, Partial Orders – Hasse Diagrams, Equivalence Relations and Partitions.

Module-4	The Principle of Inclusion and Exclusion	10 hours

The Principle of Inclusion and Exclusion: The Principle of Inclusion and Exclusion, Generalizations of the Principle, Derangements – Nothing is in its Right Place, Rook Polynomials.

Recurrence Relations: First Order Linear Recurrence Relation, The Second Order Linear Homogeneous Recurrence Relation with Constant Coefficients,

Module-5	Introduction to Graph Theory	10 hours

Introduction to Graph Theory: Definitions and Examples, Sub graphs, Complements, and Graph
Isomorphism, Vertex Degree, Euler Trails and Circuits ,

Trees: Definitions, Properties, and
Examples, Routed Trees, Trees and Sorting, Weighted Trees and Prefix Codes