

**DISCRETE MATHEMATICAL STRUCTURES**  
(Common to CSE & ISE)

Subject Code: 10CS34  
Hours/Week : 04  
Total Hours : 52

I.A. Marks : 25  
Exam Hours: 03  
Exam Marks: 100

**PART - A**

**UNIT - 1** **6 Hours**  
**Set Theory:** Sets and Subsets, Set Operations and the Laws of Set Theory, Counting and Venn Diagrams, A First Word on Probability, Countable and Uncountable Sets

**UNIT - 2** **7 Hours**  
**Fundamentals of Logic:** Basic Connectives and Truth Tables, Logic Equivalence – The Laws of Logic, Logical Implication – Rules of Inference

**UNIT - 3** **6 Hours**  
**Fundamentals of Logic contd.:** The Use of Quantifiers, Quantifiers, Definitions and the Proofs of Theorems

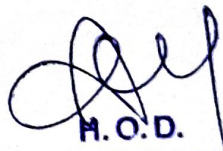
**UNIT - 4** **7 Hours**  
**Properties of the Integers:** Mathematical Induction, The Well Ordering Principle – Mathematical Induction, Recursive Definitions

**PART - B**

**UNIT - 5** **7 Hours**  
**Relations and Functions:** Cartesian Products and Relations, Functions – Plain and One-to-One, Onto Functions – Stirling Numbers of the Second Kind, Special Functions, The Pigeon-hole Principle, Function Composition and Inverse Functions

**UNIT - 6** **7 Hours**  
**Relations contd.:** Properties of Relations, Computer Recognition – Zero-One Matrices and Directed Graphs, Partial Orders – Hasse Diagrams, Equivalence Relations and Partitions

**UNIT - 7** **6 Hours**  
**Groups:** Definitions, Examples, and Elementary Properties, Homomorphisms, Isomorphisms, and Cyclic Groups, Cosets, and Lagrange's Theorem.  
**Coding Theory and Rings:** Elements of Coding Theory, The Hamming Metric, The Parity Check, and Generator Matrices

  
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**UNIT – 8****6 Hours****Group Codes:** Decoding with Coset Leaders, Hamming Matrices**Rings and Modular Arithmetic:** The Ring Structure – Definition and Examples, Ring Properties and Substructures, The Integers Modulo  $n$ **Text Book:**

1. Ralph P. Grimaldi: Discrete and Combinatorial Mathematics, , 5<sup>th</sup> Edition, Pearson Education, 2004.  
(Chapter 3.1, 3.2, 3.3, 3.4, Appendix 3, Chapter 2, Chapter 4.1, 4.2, Chapter 5.1 to 5.6, Chapter 7.1 to 7.4, Chapter 16.1, 16.2, 16.3, 16.5 to 16.9, and Chapter 14.1, 14.2, 14.3).

**Reference Books:**

1. Kenneth H. Rosen: Discrete Mathematics and its Applications, 7<sup>th</sup> Edition, McGraw Hill, 2010.
2. Jayant Ganguly: A Treatise on Discrete Mathematical Structures, Sanguine-Pearson, 2010.
3. D.S. Malik and M.K. Sen: Discrete Mathematical Structures: Theory and Applications, Cengage Learning, 2004.
4. Thomas Koshy: Discrete Mathematics with Applications, Elsevier, 2005, Reprint 2008.

**DATA STRUCTURES WITH C****(Common to CSE & ISE)****Subject Code: 10CS35****I.A. Marks : 25****Hours/Week : 04****Exam Hours: 03****Total Hours : 52****Exam Marks: 100****PART – A****UNIT - 1****8 Hours****BASIC CONCEPTS:** Pointers and Dynamic Memory Allocation, Algorithm Specification, Data Abstraction, Performance Analysis, Performance Measurement**UNIT - 2****6 Hours****ARRAYS and STRUCTURES:** Arrays, Dynamically Allocated Arrays, Structures and Unions, Polynomials, Sparse Matrices, Representation of Multidimensional Arrays**H. O. D.****Dept. Of Computer Science & Engineering  
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