Branch: BCA	Semester-II
Subject Code: 2102	Lecture: 04 Credit: 04
Subject Title	DISCRETE STRUCTURES AND GRAPH THEORY

Modules	Sr. No.	Topic and Details	No of Lectures Assigned	Marks Weight age
UNIT-I	1	**Set Theory:** Definitions: Sets, Subsets, Types of sets, Power set, Complement of a set, Operations on sets, set builder form , listing form ,set cardinality and examples, Venn Diagram & examples, Fundamental laws of sets and examples .	8	16
UNIT-II	2	**Relations:** Definitions, i. Relation, ii. Reflexive Relation, iii. Symmetric Relation, iv. Transitive Relation, v. Antisymmetric Relation, vi. Equivalance Relation, vii. Equivalance classes. Theorems and problems Recurrence relation: Definitions and problems	8	16
	3	**Functions:** Define i. Function ii. Injective functions iii. Surjective functions iv. Bijective functions v. Composite function vi. Inverse of a function. vii. Domain viii. Range Theorems	8	16
UNIT-III	4	**Permutations and Combinations :** Definitions: Permutation, Combination and problems	6	12
UNIT-IV	5	**Binomial theorem and Mathematics Induction:** Binomial Theorem : Statement and problems Mathematical Induction: 1st and 2nd principles and problems	4	8
	6	**Properties of integers:** Definition of gcd, lcm, Theorems Euclidean algorithm and problems	4	8
	7	**Graph theory:** Graphs, types of graphs, Handshaking Lemma, Isomorphism of graphs, Subgraphs, Complement of graph.	12	24
		Total	50	100

Text & Reference Books:
1. Kolman,Busby and Ross, "Discrete mathematical Structures and graph theory"
2. Alan Doerr, K. Levasseur , "Applied discrete structure for computer science", Galgotia publications, 1988
3. Trembley & Manohar, "discrete mathematics structure with application to computer science", McGraw Hill, 1987.
4. S. Lipschutz; "Schaums outline series", McGraw Hill, 1974, Vector analysis
5. M. Spicgel, "Schaums series of essential computer mathematics", McGraw Hill, 1974