B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
Lesson Plan

Lesson Plan:

Lecture No.	Topics to be covered	Time	Ref	Teaching Method
1	Operations and Laws of Sets, Cartesian Products.	50	**B1**	**Lectures, Illustration by example**
2	Binary Relation, Partial Ordering Relation, Equivalence Relation	50	**B1**	**Lectures, Illustration by example, Problem Solving**
3.	Image of aSet, Sum and Product of Functions, Bijective functions, Inverse and Composite Function	50	**B1**	**Lectures, Illustration by example, Assignment,**
4.	Size ofa Set, Finite and infinite Sets, Countable and uncountable Sets	50	**B1**	**Lectures, Illustration by example, ,**
5.	Cantor's diagonal argument and The Power Set theorem, Schroeder-Bernsteintheorem.	50	**B1, B3**	**Lectures, Illustration by example**
6.	The Well-Ordering Principle, Recursive definition.	50	**B1**	**Lectures, Illustration by example, Problem Solving**
7.	TheDivision algorithm: Prime Numbers	50	**B1**	**Lectures, Illustration by example**
8	The Greatest Common Divisor: Euclidean Algorithm, The Fundamental Theorem of Arithmetic	**50**	**B1**	**Lectures, Illustration by example**
9	counting techniques-inclusion and exclusion	**50**	**B1**	**Lectures, Illustration by example**
10	pigeon-hole principle, Generalized pigeon-hole principle	**50**	**B1, B3**	**Lectures, Illustration by example, Problem Solving**
11	Permutation with examples	**50**	**B1**	**Lectures, Illustration by example, Problem Solving**
12	Combination with examples	**50**	**B3**	**Lectures, Illustration by example,**

				Problem Solving
13	Repetition with permutation & combination with example.	**50**	**B1**	**Lectures, Illustration by example, Problem Solving**
14	Syntax, Semantics, Validity and Satisfiability	**50**	**B1**	**Illustration by example, Problem Solving**
15	Propositional logic, Implication, Bicondition	**50**	**B1**	**Lectures, Illustration by example, Problem Solving**
16	Logical equivalence, Laws of Logic	**50**	**B1**	**Lectures, Illustration by example, Problem Solving**
17	Rules of Inference, problem	**50**	**B1**	**Lectures, Illustration by example**
18	Proof Methods and Strategies, Forward Proof	**50**	**B1, B3**	**Lectures, Illustration by example**
19	Proof by Contradiction, contraposition	**50**	**B1**	**Lectures, Illustration by example**
20	Proof of Necessity and Sufficiency.	**50**	**B1**	**Lectures, Illustration by example**
21	The use of Quantifiers, Negation	**50**	**B1**	**Lectures, Illustration by example**
22	Algebraic structure with one binary operation, properties & problems, congruence relation	**50**	**B1**	**Lectures, Illustration by example,PPT**
23	Residue classes, multiplicative & non-zero residue classes	**50**	**B1, B3**	**Lectures, Illustration by example**
24	Free & cyclic group, monoid, permutation group	**50**	**B1, B3**	**Lectures, Illustration by example**
25	Substructure, Subgroup, Normal Subgroup, Algebraic Structures with twoBinary Operation	**50**	**B1, B3**	**Lectures, Illustration by example**
26	Rings, Integral Domain andFields	**50**	**B1**	**Lectures, Illustration by example**
27.	Boolean Algebra and Boolean Ring, Identities of Boolean Algebra, Duality	**50**	**B1**	**Lectures, Illustration by**

				example,PPT
28.	Representation of Boolean Function, Disjunctive and Conjunctive Normal Form	**50**	**B1**	**Lectures, Illustration by example,PPT**
29	Graphs and their properties,Degree, Connectivity, Path, Cycle, Sub Graph	**50**	**B1**	**Lectures, Illustration by example,PPT**
30	Isomorphism, Eulerian and Hamiltonian Walks	**50**	**B2**	**Lectures, Illustration by example,PPT**
31	Graph Colouring, Colouring maps and Planar Graphs, Colouring Vertices, Colouring Edges	**50**	**B1**	**Lectures, Illustration by example,PPT**
32	List Colouring, Perfect Graph	**50**	**B1**	**Lectures, Illustration by example, PPT**
33	Definition properties andExample, Rooted Trees, Trees & Sorting	**50**	**B1**	**Lectures, Illustration by example, PPT**
34	Weighted trees & prefix code	**50**	**B1**	**Lectures, Illustration by example**
35	Bi-connected component and Articulation Points	**50**	**B1**	**Lectures, Illustration by example, PPT**
36	Shortest distances.	**50**	**B1**	**Lectures, Illustration by example,Think -pair-share**

Teaching Methods: C&T:-Chalk & Talk; PPT; Videos; Think Pair Share,

TEXT BOOKS (T):

B1. B.K.PAL, K.DAS,Discrete Mathematics

B2. Russell Merris, Combinatorics, Wiley-Interscience series , Discrete Mathematics and Optimisation

REFERENCE BOOKS (R):

B3.N. Chandrasekaran and M. Umaparvathi, Discrete Mathematics