

CS : COMPUTER SCIENCE AND ENGINEERING
IT : INFORMATION TECHNOLOGY
DISCRETE MATHEMATICS

INDEX

Sr. No.	Contents	Topics	Pg. No.
1. Mathematical Logic			
	Notes	Proposition	1
		Equivalence	4
		De Morgan's Laws	5
		Quantifiers	7
		De Morgan's Theorems for Quantifiers	9
		Principle of Mathematical Induction	10
		Logic	12
		LMR (Last Minute Revision)	12
	Assignment – 1	Questions	13
	Test Paper – 1	Questions	15
2. Set Theory and Algebra			
	Notes	Set	17
		Order of a Set	19
		Venn – Euler Diagrams	21
		Union of Two Sets	22
		Relations and Mappings	26
		Functions	34
		Pigeonhole Principle	40
		Groups	41
		Subgroups	45
		Rings	46
		Partial Order Set	47
		Lattices	52
		Boolean Algebra	59
		LMR (Last Minute Revision)	65
	Assignment – 2	Questions	68
	Assignment – 3	Questions	71
	Test Paper – 2	Questions	74
	Test Paper – 3	Questions	76

Sr. No.	Contents	Sub-Topics	Pg. No.
3. Combinatorics			
	Notes	Factorial Notation	78
		Permutation	79
		Combination	82
		Generating Functions	84
		Recurrence Relation	85
		LMR (Last Minute Revision)	87
	Assignment – 4	Questions	88
Test Paper – 4	Questions	90	
4. Graph Theory			
		Graph	92
		Connectivity	95
		Isomorphism	95
		Spanning Trees	98
		Cut Point, Bridges and Cut Vertices	99
		Tree Graphs	101
		Maps	102
		Adjacency Matrix	102
		Covering	103
		Matchings	104
		Min–Max Theorems	107
		Independent Sets	107
		Graph Colorings	108
		Nonplanar Graphs, Kuratowaskis Theorem	112
	LMR (Last Minute Revision)	112	
	Assignment – 5	Questions	114
	Assignment – 6	Questions	119
Test Paper – 5	Questions	122	
Test Paper – 6	Questions	124	
Practice Problems	Questions	126	
SOLUTIONS			
Assignment	Answer Key	131	
	Model Solutions	133	
Test Paper	Answer Key	149	
	Model Solutions	151	
Practice Problems	Answer Key	160	
	Model Solutions	161	