DSETTS Discrete Wrathematics							
Semester: I (		(	Course Title: Discrete Mathematics	Credit: 4			
Course Code: DSE113				4 T			
Course Outcomes: On successful completion of the course the learner will be able to							
CO	COGNITIVEABI	LITIES	COURSEOUTCOMES				
CO1	REMEMBERING		Remember the concept of set theory	and functional			
			relationships.				
CO 2	UNDERSTANDIN	G	Understand the concept of functions and ty	pes of functions.			
CO3	APPLYING		Study the computational and mathematic	tical context of			
			Boolean Algebra.				
CO4	ANALYSING		Describe several practical applications of	of graph theory,			
			matrix algebra,				
CO5	EVALUATING		Evaluate simultaneous equations using mat	rix algebra.			

## **DSE113 Discrete Mathematics**

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	1	1	1	1	-
<b>CO 2</b>	1	2	1	1	1
<b>CO 3</b>	2	1	-	1	1
<b>CO 4</b>	1	2	1	-	1
CO 5	1	1	-	1	-
<b>CO</b> 6					

Unit	Detailed Syllabus	
Ι	Set Theory	
	• Introduction, Representation of sets, Types of sets	
	Venn Diagram, Operations on sets	
	• Algebra of sets with proof	
	• The cardinality of sets, Addition theorem, and its examples.	
	• Examples on set theory	
II	Functions	15
	• Introduction, Definition, Domain, Co-domain and Range of a	
	Function	
	• Types of Function: Into Function, On-To Function, One to One	
	Function, Many to One Function, One to One Correspondence and	
	its examples.	
	• Classification of Function-Algebraic Functions, Composite, Identity and Inverse functions,	
	• Transcendental Functions, exponential functions, and logarithmic	
	functions	
III	Boolean Algebra & Graph Theory	15
	Introduction, Basic Definitions	
	Duality, Basic Theorems	
	Boolean Algebras as lattices	
	Kinds of Lattices	
	• Representation Theorem, Sum-of-product form for sets, Sum-of-	
	products form for Boolean Algebras	

	Graph Theory			
	• Introduction and Data Structures, Kinds of graph, Degree of a vertex			
	• Complete graph, Regular graph, Cycle, Pendant vertex			
	• Definitions, Paths Connected Graphs, graph isomorphism,			
	Subgraph, Walks			
	<ul> <li>Trees, Spanning Trees, Directed graphs</li> </ul>			
IV	Matrix Algebra			
	• Determinant, Rules of determinant with examples			
	<ul> <li>Meaning and Definition of Matrix, Types of Matrices</li> </ul>			
	• Addition and Subtraction of Matrices, Scalar Product of a Matrix			
	with examples			
	• Multiplication of two Matrices with Examples, Transpose of a			
	matrix, Adjoint matrix			
	• Inverse of a matrix, Solution of simultaneous equations using a			
	matrix, Laws of Matrix Algebra.			

## **Suggested Reference Books:**

- 1. Advance Mathematics, Prof. H.R. Vyas and Others, B.S. Shah Prakashan
- 2. Advance Mathematics for F.Y.B.C.A., Dr. K.R. Kachot, Ramesh Kataria, Mahajan Publishing House.
- 3. Schaum's outlines Discrete Mathematics Graph Theory, Narsingh Deo
- 4. Fundamental Approach to Discrete Mathematics, D.P. Acharya Sreekkumar