

Program: Certificate		Year: First	Semester: II
Class: UG			
Subject: Mathematics			
Course Code: MN-2A		Course Title: Discrete Mathematics	
Course Learning Outcomes: This course will enable the students to: <ul style="list-style-type: none"> a) Understand the concept equivalence relation & partial order relation. b) Understand the concept of bounds in POSET and able to understand the concept of Lattice. c) Understand mathematical logic and logical operations to various fields. 			
Credit: 4 (Theory)		Compulsory	
Full Marks: 75		Time: 3 Hours	
Unit	Content		Hours
I	Relation: Reflexive, Symmetric, Antisymmetric & transitive relation, Partition, Equivalence relation, Congruence Modulo Relation, Induced relation, Fundamental theorem.		15 h
II	Partial Order Relation: Partial Order Set, <i>l.u.b.</i> & <i>g.l.b.</i> , <i>inf.</i> , <i>sup.</i> , maximal & minimal element. Definition & examples of Lattice, Zorn's lemma		15 h
III	Logic: Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions, and precedence of logical operators.		15 h
IV	Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations. Validity of argument by different methods.		15 h
Sessional Internal Assessment (SIA) Full Marks . 25 Marks A Internal written Examination . 20 Marks (1 Hr) B Over All Performance including Regularity . 05 Marks			
Books Recommended: <ol style="list-style-type: none"> 1. Set theory by K. K. Jha, 2. R. P. Grimaldi, Discrete Mathematics and Combinatorial Mathematics, Pearson Education, 3. Discrete Mathematics by M. K. Gupta; Krishna Prakashan. 4. Discrete Mathematics by Lipschutz, Lipson & Patil; Schaum's Outlines 			