DISCRETE MATHEMATICS

Course Code: **MM24004OE**   Total Credits: **02**
Semester: **MA/M.Sc. 4th Semester**   Total Marks: **50**
Continuous Assessment: **Marks 10,** Theory: **Marks 40**   Time Duration: **1½ hrs**

Course Objectives: To introduce the student to various concepts of Boolean Algebra and Lattices to be applied in day to day problems related to networking structure, transportation etc.

Course Outcome: The students shall be able to use Lattices, ordered relations, Boolean algebra and their properties in information technology and other physical phenomena.

Unit-I

Lattices: Set operations, product sets, equivalence relations, relation and ordering, partially ordered sets, chain or completely ordered sets, lattices properties, lattices and algebraic systems, sub-lattices, direct product and homomorphism, modular lattices, complete lattices, distributive lattices, complemented lattices.

Unit-II

Boolean Algebra: Introduction, binary operations, algebraic structure, Boolean algebra, general properties of Boolean algebra, Boolean expressions, principle of Duality, Boolean algebra as a lattice, sub-Boolean algebra, direct product and homomorphism, representation theorem.

Recommended Books:

1. Schaum's Outlines, Discrete Mathematics, Ind. Edition Tata McGraw-Hill Publishing Company Ltd. New Delhi, 1976.

2. Harish Mittal, Vinay K.Goyal, Deepak K. Goyal, I. K, A Text Book of Discrete Mathematics, Int. Publishing House Pvt. Ltd (2010).

3. Kolman, Busby, Discrete Mathematical Structures, Pross, Sixth Edition, PHI Laming Pvt. Ltd. (2010).

4. Richard Johnsonbaugh, Discrete Mathematics, sixth edition, Pearson Prentice Hall (2007).