

**Curriculum Plan: B.Sc. (Hons) Mathematics (Semester III)- Discrete Mathematics  
2024-25 Odd Sem**

<p align="center">Dr. Rajni Kanwar Assistant Professor Department of Mathematics Kalindi College University of Delhi Delhi- 110008 Mobile: 7607401426 E- mail: rajnikanwar@kalindi.du.ac.in</p>		<b>Marks Distribution</b>	<b>Theory - 90</b>
			<b>Internal Assessment- 30</b> <b>Practical - 40</b>
		<b>Classes Assigned</b>	<b>Lectures: 3 per week</b>
	<b>References</b>	<p>1. Davey, B. A., &amp; Priestley, H. A. (2002). Introduction to Lattices and Order (2nd ed.). Cambridge University press, Cambridge.</p> <p>2. Goodaire, Edgar G., &amp; Parmenter, Michael M. (2006). Discrete Mathematics with Graph Theory (3rd ed.). Pearson Education Pvt. Ltd. Indian Reprint.</p> <p>3. Lidl, Rudolf &amp; Pilz, Gunter. (2004). Applied Abstract Algebra (2nd ed.), Undergraduate Texts in Mathematics. Springer (SIE). Indian Reprint</p>	
	<b>Week</b>	<b>Topics</b>	
	<b>1<sup>st</sup> week</b>	The cardinality of a set	
	<b>2<sup>nd</sup> week</b>	Definitions, examples and basic properties of partially ordered sets	
	<b>3<sup>rd</sup> week</b>	Order-isomorphisms, Covering relations, Hasse diagrams	
	<b>4<sup>th</sup> week</b>	Dual of an ordered set, Duality principle, Bottom and top elements, Maximal and minimal elements	
	<b>5<sup>th</sup> week</b>	Zorn’s lemma, Building new ordered sets, Maps between ordered sets	
	<b>6<sup>th</sup> week</b>	Class Test and Lattices as ordered sets, Lattices as algebraic structures,	
	<b>7<sup>th</sup> week</b>	Sublattices, Products, Lattice isomorphism	
	<b>8<sup>th</sup> week</b>	Definitions, examples of modular and distributive lattices	
	<b>9<sup>th</sup> week</b>	Properties of modular and distributive lattices	
	<b>10<sup>th</sup> week</b>	The M3–N5 theorem with applications, Complemented lattice, Relatively complemented lattice, Sectionally complemented lattice	
	<b>11<sup>th</sup> week</b>	Class Test and Boolean algebras, De Morgan’s laws, Boolean homomorphism	
	<b>12<sup>th</sup> week</b>	Representation theorem, Boolean polynomials, Boolean polynomial functions, Equivalence of Boolean polynomials	
	<b>13<sup>th</sup> week</b>	Disjunctive normal form and conjunctive normal form of Boolean polynomials	
	<b>14<sup>th</sup> week</b>	Minimal forms of Boolean polynomials, Quine-McCluskey method, Karnaugh diagrams	
	<b>15<sup>th</sup> week</b>	Integrability Switching circuits and applications, Applications of Boolean algebras to logic, set theory and probability theory and Class test	