

UNIT III : Complete Lattices - Complete sublattices of a complete lattice - conditionally complete Lattices - σ Lattices - Compact elements and compactly generated Lattices - Subalgebra Lattice of an algebra - Closure operations - Galois connections - Dedekind cuts - partly ordered sets as topological spaces.

UNIT IV : Distributive lattices - Infinitely distributive and completely distributive Lattices - Modular Lattices - Characterisation of modular and distributive Lattices by their sublattice - Distributive sub lattices of modular lattices - The isomorphism theorem of modular Lattices - Covering conditions - Meet representation in modular and distributive Lattices - Boolean algebras and De-Morgan formulae - Complete Boolean algebras - Boolean algebras and Boolean ring.

Content and extent as in Topics 1 to 36 and 42 to 44 of prescribed book.

Prescribed book : Introduction to Lattice Theory, Gabor Szasz Academic press, New York.

M303 - UNIVERSAL ALGEBRA SX-S 303

UNIT I : Lattices - Definitions of Lattices - Isomorphisms of Lattices and sub lattices - Distributive and modular lattices - Complete lattices - Equivalence relations - Algebraic Lattices - Closure operations.

UNIT II : Elements of universal algebra - Definition and examples of algebras - Isomorphic algebras and sub algebras - Algebraic lattices and sub universes - The irredundant Basis theorem - Congruences and Quotient algebras - Homomorphisms - The homomorphism and isomorphism theorems.

UNIT III : Direct products - Factor congruences - Directly indecomposable algebras - Sub direct products - subdirectly irreducible algebras - Simple algebras - Class operators - Varieties.

UNIT IV : Terms - Term algebras - Free algebras - Identities and Free algebras - Birkhoff's theorem - Malcev conditions - The centre of an algebra.

Content and extent as in the book. A course in Universal algebra - Stanley Burris, H.P. Sankappanavar, Springer - Verlag, Berlin.

M304 - NUMBER THEORY SX-S 304

UNIT I : Arithmetical Functions and Dirichlet Multiplication : Introduction - The Mobius function $\mu(n)$ - The Euler totient function $\phi(n)$ - A relation connecting ϕ and μ - A product formula for $\phi(n)$ - The Dirichlet product of arithmetical functions - Dirichlet inverses and the Mobius inversion formula - The Mangoldt function $\Delta(m)$ The Multiplicative functions - Multiplicative functions and Dirichlet multiplication - The inverse of a completely multiplicative function - Liouville's function $\lambda(n)$ - The divisor functions $\sigma_\alpha(n)$.

Chapter - 2 : Articles 2.1 to 2.13.

UNIT II : Averages of Arithmetical Functions : Introduction - The big oh notation. Asymptotic equality of functions - Euler's summation formula - Some elementary asymptotic formulas - The average order of $\tau(n)$ - The average order of the divisor functions $\sigma_\alpha(n)$ - The average order of $\phi(n)$ - An application to the distribution of lattice points visible from the origin - The average order of