III SEMESTER

M301 - RINGS AND MODULES SX-S 301

UNIT I : Rings and ring homomorphisms : Ideals, quotient rings; zero-divisors, Nilpotent elements, Units; prime ideals and Maximal Ideals; Nil radical and Jacobson radical : operations on ideals; Extension and contractions.

UNIT II : Modules and module homomorphisms; Submodules and quotient modules; operations on submodules; Direct sum and product; Finitely generated modules; exact sequences; Tensor product of modules; Restriction and extension of scalars Exactness properties of the tensor product; Algebras; Tensor product of algebras.

UNIT III : Local properties; Extended and contracted ideals in rings of fractions.

UNIT IV : Primary decompositions.

(Content and extent of chapters 1 to 4 in the prescribed book)

Prescribed Book : Introduction to Commutative Algebra by M.F. Atiyah and I.G. MAC DONALD Addison - Wesley publishing company, London.

M302 - LATTICE THEORY SX-S 302

UNIT I : Partially ordered sets - Diagrams - Special subsets of a partially ordered set - Length - Lower and upper bounds - The Jordan - Dedikind chain condition - Dimension functions.

UNIT II : Algebras - Lattices - The Lattice theoretical duality principle - Semilattices - Lattices as partially ordered sets - Diagrams of Lattices - Sublattices - Ideals - Bound elements of a Lattice, atoms one dual atoms - Complements, relative complements, semicomplements - Irreducible and prime elements of a Lattice - The homomorphisms of a Lattice - axiom systems of Lattices.

W.e.f. 2000-2001 AB