M.A/M.Sc Mathematics Semester 2nd

Effective from academic session 2010 ⟹ **Repetition for 2012 with minor change**

S.No	Subject Code	Subject Name	Theory		Internal	
			Max	Min.	Max	Min
1	MM-CP-201	Abstract Algebra-II	80	32	20	08
2	MM-CP-202	Real Analysis-II	80	32	20	08
3	MM-CP-203	Complex Analysis -II	80	32	20	08
4	MM-CP-204	Methods of Applied Mathematics-II	80	32	20	08
5	MM-CP-205	Functional Analysis-I	80	32	20	08

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ADVANCED ABSTRACT ALGEBRA—II

Course No. MM-CP-201

Unit I

Relation and Ordering, partially ordered sets, Lattices, properties of Lattices, Lattices as algebraic Systems, sub-lattices, direct product and homomorphism, Modular Lattices, complete Lattices, bounds of Lattices, Distributive Lattice, Complemented Lattices.
Introduction, definition and important properties of Boolean Algebra, Sub Boolean algebra, Direct product and homomorphism, Join-irreducible, Meet-irreducible, Atoms, Stone's representation theorem. Boolean expressions and their equivalence, Free Boolean algebra, Values of Boolean expression, representation of Boolean function, Karnaugh maps, Minimization of Boolean function.

Unit-II

Modules, Sub-modules, Quotient Modules, Homomorphism and Isomorphism theorem. Cyclic Modules, Simple Modules, Semi-Simple Modules, Schur's Lemma, Free Modules. Ascending chain condition and Maximum condition, and their equivalence. Descending chain condition and Minimum condition, and their equivalence. direct sums of modules. Finitely generated modules.

Unit-III

Fields: Prime fields and their structure, Extensions of fields, Algebraic numbers and Algebraic extensions of a field, Roots of polynomials, Remainder and Factor theorems, Splitting field of a polynomial, Existence and uniqueness of splitting fields of polynomials , Simple extension of a field.

Unit IV

Separable and In-separable extensions, The primitive element theorem, Finite fields, Perfect fields, The elements of Galois theory. Automorphisms of fields, Normal extensions, Fundamental theorem of Galois theory, Construction with straight edge and compass, R^n is a field iff $n = 1, 2$.

Recommended Books:

1. I.N.Heristein : Topics in Algebra.
2. K.S.Miller : Elements of Modern Abstract Algera.
3. Surjeet Singh and Qazi Zameer-ud-din: Modern Algebra, Vikas Publishers Pvt. Limited.
4. P.B,.Bhatacharaya and S.K.Jain : Basic Abstract Algebra.
5. J.B. Fragleigh : A First Course in Abstract Algebra.
6. J.A.Gallian : Contemporary Abstract Algebra.