

Semester	4
Course	Major
Paper Code	C2MT230421T
Paper Title	Algebra-3
No. of Credits	4
Theory / Practical / Composite	Theory
Minimum No. of preparatory hours per week a student has to devote	4
Number of Modules	Nil
Syllabus	<p>Algebra-3 [52 classes]</p> <p>Rings, Sub-rings, Integral Domains, Division Rings (3), Fields, and Subfields (2), Basic Theorems (with proof) on Rings, Units in Ring, units in the ring of integer modulo n, Wilson's theorem. Integral Domains and Fields (4), Characteristic of a Ring (2).</p> <p>Ideals, Ideals generated by a set, Properties of Ideals (4) Principal Ideals, Quotient Rings, Prime Ideals and Maximal Ideals and their properties (10).</p> <p>Ring Homomorphisms, Isomorphism Theorems, Ideals of a quotient ring and correspondence theorem (10), Chinese Remainder Theorem and its applications (3) Embedding of an Integral Domain in a field (2).</p> <p>Polynomial rings over commutative rings, division algorithm and consequences [4], principal ideal domains [3], factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion [5].</p>
Learning Outcomes	<p>On successful completion of the course a student will be able to do the following.</p> <ul style="list-style-type: none"> • Will get acquainted with rings and its basic properties. • Understanding their homomorphisms and ideals and applications to different problems. • Getting familiarized with the concept of embedding of an integral domain over a field. • Understanding polynomial rings over commutative rings, division algorithm and its consequences.
Reading/Reference Lists	Contemporary Abstract Algebra: Joseph Gallian

	Abstract Algebra: Sen, Ghosh & Mukhopadhyay Abstract Algebra: Dummit & Foote Higher Algebra: S.K.Mapa Topics in Algebra; I.N. Herstein	
Evaluation	End Sem:70 CIA:30	
Paper Structure for Theory Semester Exam	7 questions each carrying 10 marks out of 13/14 questions.	