

Subject Code: 1SC2040302	Subject Title: ALGEBRA – I
---------------------------------	-----------------------------------

Course Objective:

- This is an introductory course in Algebra-I which provide a working knowledge of the basic definitions and theorems of the Group Theory, Ring Theory, Sylow's theorem and Polynomial ring over a rational field described in detail in the syllabus.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Tutorial	Theory	Tutorial	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	1	4	1	60	40	-	-	100

Subject Contents			
Unit. No	Topic	Total Hours	Weight (%)
1	[Revision: Group, Subgroup, Normal Subgroups, Quotient groups, Homomorphism of groups, Isomorphic groups, Permutation groups, Direct product of groups] Cayley's theorem, Conjugacy relation on a group and its applications, Solvable group.	18	25
2	Group actions, Sylow's theorem, , Finite abelian groups, Simple groups.	18	25
3	[Revision: Ring, subrings, ring homomorphisms, ideals and quotient rings, prime and maximal ideals, Polynomial rings] Field of fractions of an integral domain, Divisibility in rings, Euclidean ring, Principal Ideal rings.	18	25
4	Polynomial ring over a rational field, irreducibility criteria, polynomial ring over a commutative ring, Unique factorization domain.	18	25

Course Outcome:

On successful completion of the course,

- students should be able to apply the conceptual structure of group theory, ring theory ,To gain skill in problem solving and critical thinking.

Note: The course is indicated by “Topics in Algebra” by I. N. Herstein, John Wiley and Sons Inc., 2nd Edition.

List of References:

- “Basic Abstract Algebra” by Bhattacharya, Jain and Nagpal, 2nd Edition.
- “Algebra” by S. Mcclane and G. Birkhoff, 2nd Edition,
- “Basic Algebra” by N. Jacobson, Hind. Pub. Corp.1984.
- “A first course in Abstract Algebra” by John Fraleigh (3rd Edition), Narossa Publishing House, New Delhi.