**MA3703- Algebra-I**

**Set Theory:** Set, Binary Relation, Equivalence relation, Partition etc.

**Group Theory:** Definition of groups, subgroups, normal subgroups and quotient groups, Lagrange’s theorem, cyclic groups, symmetric groups, alternating groups, homomorphism, fundamental theorem of homomorphism, permutation group, Cayley’s theorem, direct product of groups. Sylow's theorem and related theorem.

**Ring Theory:** Definition of ring and its other properties, Commutative ring with identity-Axioms, examples, integral domain, field, ideals. quotient ring, prime and maximal ideal, principal ideal domain, Euclidean domain, the field of quotients of an integral domain.

**References:**

1. J. A. Gallian, Contemporary Abstract Algebra, 4th Ed., Narosa, 1998.
2. I. N. Herstein, Topics in Algebra, Wiley, 2004.
3. J. B. Fraleigh, A First Course in Abstract Algebra, Addison Wesley, 2002.
4. D. S. Dummit and R. M. Foote, Abstract Algebra, John Wiley and Sons Inc, 3rd Edition. 2004.
5. R.K. Sharma, S.K. Shah and A.G. Shankar, Algebra I: A Basic Course in Algebra, Pearson Education, 2011
6. W. J. Gilbert. And W. K. Nicholson, Modern Algebra with Applications, 2nd Edition, Wiley, 2004.