SEMESTER- VI

MIC-08: Ring Theory and Linear Algebra

Course Outcomes

After the completion of the course, the student will be able to understand:

CO1: The fundamental concept of Rings, subrings, ideals and the corresponding homomorphisms.

CO2: The concept of linear independence of vectors over a field, the idea of a finite dimensional vector space, basis of a vector space and the dimension of a vector space.

MIC-08: Ring Theory and Linear Algebra (3 credits) Full Marks-100		
Unit	**Topics to be covered**	**No. of Lectures**
1	Definition and examples of rings, properties of rings, subrings, characteristics of a subring, Ideal, Ideal generated by a subset of a ring, quotient ring, operation on ideals, prime and maximal ideals.	10
2	Ring homomorphisms, properties of ring homomorphism, isomorphism theorems.	10
3	Definition of linear space, general properties of linear space, vector subspaces, linear combination of vectors, linear span. Linear dependence and independence of vectors, basis of a vector space, finite dimensional vector spaces.	10
	TOTAL	30

Book References:

1. Gallian, Joseph. A. (2013). Contemporary Abstract Algebra (8th ed.). Cengage Learning India Private Limited. Delhi. Fourth impression, 2015.
2. Friedberg, Stephen H., Insel, Arnold J., & Spence, Lawrence E. (2003). Linear Algebra (4th ed.). Prentice-Hall of India Pvt. Ltd. New Delhi.
3. I.N. Herstein, Abstract Algebra, Prentice Hall, New Jersey.
4. Hoffman and Kunze, Linear Algebra.
5. Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.
6. Lalji Prasad, Linear Algebra, Paramount Publications.
7. S.K. Mapa, Higher Algebra (Abstract and Linear), Levant Books, Kolkata.