Paper Code	THEORY	Credits:2
MT202	**Title: Discrete Mathematics**	**30 L**
Unit 1	**Set theory and Logic**	**15 L**
	Introduction to set notation, Manipulation of sets, inclusion, intersection, union, complements, Inclusion-exclusion. Relation, equivalence relation, equivalence classes. Mathematical Logic, the use of truth tables, express mathematical statements symbolically, using quantifiers and connectives, and to negate them, the three main methods of proof (direct, contraposition and contradiction). Mathematical Induction.	
Unit 2	**Functions and Countability**	**15 L**
	Functions and composition, domain and range, injectivity, surjectivity and bijectivity of functions, invertibility of functions. Selecting and counting elements from finite sets. The pigeonhole principle. Recursively Defined Sequences, Solving Recurrence Relations: The Characteristic Polynomial, Solving Recurrence Relations: Generating Functions.	

References:

1. Kenneth H. Rosen, Discrete Mathematics and its applications, Mc-Graw Hill International Edition, Mathematics Series.
2. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.

Additional References:

1. G. Birkoff and S. Maclane, A Survey of Modern Algebra, Third Edition, Mac Millan,New York, 1965.
2. K.D. Joshi, Foundations in Discrete Mathematics, New Age Publishers, New Delhi, 1989.