B. Sc. IT (HONS.) 2020: 1st Semester				
Course	**Credits-06**		**Total Marks- 90**	
	Theory	**Tutorial**	**Theory**	**Tutorial**
BIT120C2: MATHEMATICS FOR INFORMATION TECHNOLOGY	04	02	**60**	**30**

THEORY (4 CREDITS;   MAX. MARKS: 60   MIN. MARKS: 24

UNIT-I Sets, Relations and functions

Sets & their representations, various types of sets, subsets, power set, universal set, operations on sets, ordered pairs, Cartesian product on sets.
Relation- domain, co-domain and range. Equivalence relation.
Functions- graph of a function, various types of functions, application of sets and functions.

UNIT-II Matrices and Determinants

Introduction, Matrix, Square Matrix, Column Matrix, Row Matrix, Diagonal Matrix, Unit Matrix, Upper triangular and lower triangular matrix, symmetric matrix, skew-symmetric matrix, trace of matrix, transpose of matrix, addition, subtraction and multiplication of two matrices , Minors and Cofactors, Adjoint of a square matrix, Inverse of a matrix. Rank of a matrix, simple applications.

UNIT-III Permutation, Combination and Binomial Theorem

Definitions, fundamental principles of counting, elementary study of combinations, values of ^nP_r and ^nC_r, simple applications. Proof of binomial theorem for positive integral exponent using principle of induction. General and particular term related problems, value of $(102)^6$ and $(99)^4$ by means of binomial theorem.

UNIT-IV Boolean Algebra

Introduction, Boolean algebra as an algebraic structure, principle of duality. The conditional and bi-conditional statements. Arguments and their validity. Some simple applications to switching circuits.

TUTORIALS: 2 CREDITS;   MAX. MARKS: 30   MIN. MARKS: 12

Note: *The Tutorial Component shall be based on the Unit-I to Unit-IV*

SUGGESTED READING:

1. Mathematics Text Books for class XI and XII (J&K BOSE)
2. A Text book of Mathematics by RS Aggarwal