HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

MCA – 14 Foundation in Mathematics

Examination Scheme					
Internal		External		Total	
Th. (Marks)	Pr. (Marks)	Th. (Marks)	Pr. (Marks)	Th. (Marks)	Pr. (Marks)
30	--	70	--	100	--

UNIT – I (25%)

Set Theory :

Introduction, Definition and Concepts, Representation of Sets, Finite Sets, Infinite Sets (Definition), Set Operations : Union, Intersection, Addition theorem, difference, Symmetric difference, D' Morgons Law, Subsets, Power Sets, Partitions Sets, Mathematical inductions, computing Principles, Permutations, Combinations.

UNIT – II (25%)

Functions :

Introduction : Definitions and Concepts, One to One, Onto functions, Invertible functions, Mathematical Functions : Floor and ceiling functions, Integer and Absolute value functions, Remainder functions, Exponential functions, logarithmic functions, Sequences and Series : Definitions, Deferent between sequences and series, To find n^{th} term and sum of n terms, Recursive functions : Definition and Examples.

UNIT – III (25%)

Boolean Algebra :

Introduction, Basic Definitions, Duality, Basic Theorems, Boolean Algebra And lattice, Representation Theorem, Sum-of-product form for sets, Sum-of-products form for Boolean Algebra.

UNIT – IV (25%)

Vectors and Matrices :

Vectors : Definition only, Metrics :- Definition and Concept, Matrix Addition, Multiplication, Scalar multiplication, Transpose of a Matrix, Square matrices, Invertible matrices, Inverse of a matrix, Determinants, Basic theorems of determinants, Boolean Matrix.

Books :

Discrete Mathematics (Second Edition) S.LIPSCHUTZ, M.LIPSON (TMH)
Elements of Discrete Mathematics C.L. LIU (TMH)
Discrete Mathematics VINAY KUMAR (B.P.B.)
Discrete Mathematics S. NANDA (Allied Publishers Pvt. Ltd.)

Question Paper Scheme :

Section – I Section – II
Q.1 Objective Type Unit I & II (11) Marks Q.4 Objective Type Unit III & IV (11) Marks
Q.2 Unit –I **OR** Q.2 Unit-I (12) Marks Q.5 Unit – III **OR** Q.2 Unit – III (12) Marks
Q.3 Unit – II **OR** Q.3 Unit – II (12) Marks Q.6 Unit – IV **OR** Q.3 Unit – IV (12) Marks