

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

FIRST YEAR B.C.A.

BCA 104 : Discrete Mathematics

Teaching Scheme (per week)	
Th. (hours)	Pr. (hours)
3	--

Examination Scheme					
INT		EXT		TOTAL	
Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
30	--	70	--	100	--

UNIT I

(17 Marks)

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

(18 Marks)

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, Different between sequences and series; To find n^{th} term and sum of n terms, Recursive functions : Definition and Examples

UNIT III

(17 Marks)

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

(18 Marks)

Permutation, Combinations and Matrices :

Permutation, Combinations

Metrics -Definition and Concept, square matrix, unit matrix, null matrix, Matrix Addition, Multiplication, Scalar multiplication, Transpose of a Matrix, Invertible matrices, Inverse of a matrix, Determinants, Basic theorems of determinants, Boolean Matrix

Reference Books :

Discrete Mathematics(Second Edition)
Elements of Discrete Mathematics
Discrete Mathematics
Discrete Mathematics

S.LIPSCHUTZ, M. LIPSON (TMH)
C.L. LIU (TMH)
VINAY KUMAR (B.P.B.)
S. NANDA (Allied Publishers Pvt. Ltd.)

Question Paper Scheme:

University Examination Duration : 3 Hours.

Q.1 - Unit-I (17 Marks)

- A. Objective/ Short Questions.
- B. Descriptive/ Long questions.

Q.2 - Unit-II (18 Marks)

- A. Objective/ Short Questions.
- B. Descriptive/ Long questions.

Q.3 - Unit-III (17 Marks)

- A. Objective/ Short Questions.
- B. Descriptive/ Long questions.

Q.4 - Unit-IV (18 Marks)

- A. Objective/ Short Questions.
- B. Descriptive/ Long questions.

Note: Options should be given in all questions

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