C. U. SHAH UNIVERSIT, WADHWAN CITY.

Faculty of: **Computer Science**
Course: **Bachelor of Science (Information Technology)**
Semester**: I**
Subject Code**: 4CS01TMH1**
Subject Name: **Mathematics**

Sr. No	Branch Code	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								
									Theory				Practical				Total
				Th	Tu	Pr			Internal Assessment		End Semester Exams		Internal Assessment		End Semester Exams		
									Marks	Duration	Marks	Duration	Marks	Duration	Marks	Duration	
2	2	4CS01TMH1	Mathematics	4	--	--	4	4	15 SE 15 CE	1Hr.	70	2½ Hrs.	-	--	---	--	100

AIM:

This course is aimed at enabling the students to

- Solve arithmetic and logical problems

COURSE CONTENTS

Unit I Set **10 Hrs.**

- Definition
- Methods of representing sets, Different notations in sets, Standard sets of numbers
- Types of sets, Empty set, Singleton set, Finite set, Infinite set, Equivalent Sets
- Equal sets, Subset, Superset, Proper subset, Power set, Universal set, Venn diagrams
- Operations on sets, Union of sets, Cardinal number of sets, Cardinal properties of sets
- De Morgan's law for intersection, Cartesian product of two sets

Unit II Relation **06 Hrs.**

- Definition, Properties of relation, Domain and range
- Representation of relations using graph, Types of relation
- Reflexive Relation, Symmetric Relation, Anti-Symmetric Relation
- Transitive Relation, Equivalence Relation, Combining relations
- Composition of Relations

Unit III Function **06 Hrs.**

- Definition, Domain, Co-domain and range of a function
- Types of functions, Even Function, Odd Function
- Monotonic Function, Subjective Function, Bijective Function
- Injective Function, Equal functions, Real functions
- Different functions and their graphs

Unit IV Determinant and Matrix **08 Hrs.**

- Definition of determinant, properties of determinant, Definition of matrix
- Types of matrices, row matrix, column matrix, null matrix
- square matrix, diagonal matrix, scalar matrix, identity matrix,
- Symmetric matrix, Orthogonal matrix, Transpose of matrix
- Addition of matrix, Subtraction of matrix
- Scalar multiplication of matrix, Matrix multiplication
- Determinant of a square matrix, Adjoint of a matrix, Inverse of matrix

Unit V Co-ordinate Geometry **08 Hrs.**

- Introduction
- Distance between two points, Section formula, Area of triangle
- Collinearity of three points, Equation of straight lines, Slope of a straight line
- Intercepts of a line on the axes, Standard forms of equations of straight lines
- Angle between two points

Unit VI Limit and continuity **10 Hrs.**

- Introduction to limit
- Meaning of x ->a
- Meaning of x->0
- Meaning of x->∞
- Limit of a function, Limit of a function by preparing tables, Rules of limit
- Some standard limits, Notations for finite series, Introduction to continuity
- Definition of continuity, Examples.

REFERENCE BOOKS:

1. "BCA Advanced Mathematics", H.R. Vyas, B.S. Shah Publication (3rd Edition-2007)
2. "Fundamental of Mathematical Analysis", G Das & S Pattanayak, Tata McGraw-Hill publishing company Ltd.
3. "Mathematical & statistical foundation of computer science", C Jamnadas& Co (New Edition-2013).
4. "Polytechnic Mathematics" , S. P Deshpande , Pune VidyarthiGruhPrakashan, 1984
5. "Advanced Mathematics",RaviGor, Nirav Publication(4th Edition-2006)