

Mathematics (CMP501)

Yashwantrao Chavan Maharashtra Open University

Course Title : Mathematics

Course No : CMP501

Course Details :

Unit 1. Set Theory And Number Systems :

Relevance of Mathematics

Set Notations, Types of sets, Set Operations, Properties of Set operations, Venn Diagrams

Binary Number System, Conversion between Binary and Decimal Number System, Addition and Subtraction of Binary Numbers, Octal Number System, Hexadecimal Number System

Unit 2. Mathematical Induction And Mathematical Logic :

Mathematical Induction:

First Principle, Proofs of statements using mathematical induction

Mathematical Logic : Statement, Truth value of a Statement, Types of logical statements, Types of Compound Statements, Logically Equivalent Statements, Logical Identities, Tautology and Contradiction

Unit 3. Exponents, Surds and Logarithms :

Exponential form and Laws of Exponents

Laws of Fractional Exponents, Surd, Order of Surd, Forms of surds

Logarithm, Antilogarithm, Conversion to different base, Application of Logarithms in Complex Calculations

Unit 4. Permutations and Combinations :

Addition Principle, Multiplication Principle

Factorial of Number

Permutations and Combinations

Unit 5. Relations and Functions :

Cartesian Product of Sets, Relations, Types of Relations

Equivalence Relations and Equivalence Classes

Matrix of a Relation

Functions, Types of Functions, Composition of Functions

Unit 6. Vectors, Matrices and Determinants :

Vectors, Types of Vectors, Algebra of Vectors, Collinear and Coplanar Vectors
Matrix, Types of Matrices, Algebra of Matrices, Determinants, Inverse of Matrix

Unit 7. Linear Equations, Polynomials and Introduction to Graph theory :

Linear Equations, System of Linear Equations, Representation in Matrix Form,
Cramer's Rule

Polynomials, Operations on Polynomials, Roots of polynomial Equation, Test of
Divisibility, Quadratic Equations and their Roots

Graph, Commonly used terminology in Graph Theory, Some important types of
Graphs, Representation of Graphs using Matrix, Eulerian and Hamiltonian Graphs

Unit 8. Mensuration :

Areas of Plane Figures, Perimeters of Plane Figures, Volumes of Solid Objects,
Surface Areas of Solid Objects