CONTENTS

1. NUMBER SYSTEM

Rational Numbers Terminating Rational Numbers Terminating and Non-terminating Rational Numbers Non Terminating Rational Numbers Absolute Value Real Numbers Representing Real Numbers by Points along a Line Signed Numbers Factorization Theory & Fundamental Theorem of Arit Alternate Method Highest Common factor (HCF) Methods of Determining the HCF. Method of Division HCF by Elimination and Retention(Vedic Method) Least Common Multiplier (LCM) **Division Method** Vedic Method Vertically Crosswise Relationship between LCM & HCF Operations on Fractions **Division of Fractions** Subtraction of fractions

2. THEORY OF EQUATION

General Principles of solving Simple Equation Algebraic Equation General Type I Vedic Methods Vedic Method of solving the above problems Other types of Simple Equations Merger Type of Easy Simple Equations Business problem leading to one variable linear eq Simultaneous Linear Equations Various methods of solving Simultaneous Linear equ Methods of solving simultaneous equation in Two va Method of comparison Addition/subtraction method Method of Cross Multiplication A Special Type I Special type II Quadratic equation Simple Quadratic Equations Solution by completing the squares Solve the equation by factorization Solve the equation by completing the squares Vedic Method of solving a Simple Quadratic equatio Vedic Mathematics way of finding the roots of a qu Second Special Type Third Special Type Fourth Special Type HCF of two Quadratic Equations Vedic method Nature of the roots Quadratic Equation Word Problem leading to Quadratic Equations Multiple Simultaneous Equations Second Type

3. PARTIAL FRACTION

Property of Fraction Reduction of fraction to its lowest term Methods of Resolving Proper fraction into Partial Partial Fraction Solution through Vedic Mathematics Process

4. PROGRESSIONS

Arithmetic Progression General Term of an A.P Subtraction Multiplication Division Business Application Sum of the first n terms of an Arithmetic Progress Application in Business Arithmetic Means Geometric Progression Sum of the first n terms of a G.P. Geometric Means Business Application of G.P.

5. ELEMENTS OF SET THEORY

Set

Sub sets & Super set Miscellaneous Problems Properties of Operations in Sets Intersection Distributive Laws De Morgan's Law Duality Other Laws Use of Set Theory in Business

6. MATRIX

Basic concept in business Types of Matrices Addition of Matrices Properties of Matrix Addition Illustrative Examples Alternate method Subtraction of Two Matrices Multiplication of a Matrix by a scalar or Scalar Multiplication Vector product of a matrix or Matrix Multiplicatio Procedure for multiplication of two matrices Matrices application in Business Transpose of a matrix Determinant of a square matrix Co-factor of an element Minor and Co-factor Determinant expansion or Evaluating Determinants Multiplication (Order Product) of two determinants System of Linear Equation A system having no solution is called an inconsist Application of Determinants in Business Cramer's Rule for solving linear equation with 3 The method (steps) for solving the equations is gi Ad joint of a Square matrix Steps to find an Ad joint Inverse (reciprocal) of a Square matrix **Business Applications**

7. RATIO & PROPORTION

Types of Ratios To divide a number according to Ratio Proportion Difference between Ratio and Proportion Direct Proportions Inverse Proportion Solving ratio equation Compound proportion

8. ANALYTICAL GEOMETRY

Cartesian system Distance between two points on a plane Locus Straight Line Second Method Business Applications Demand & Supply Curve Linear Supply Curve Market equilibrium Break– even Analysis Coordinates of the point dividing a line (Section) External division Two lines and their relationship

9. FUNCTIONS

Variable Univariate, Multivariate functions Illustrative examples Limits Definition of a limit Continuity Differential Calculus: (Changes in Related variabl Differentiation by First Principle or Ab-initio Me Chain (Power) Rule Derivative of an Implicit Function Interpretation of Derivatives of various Orders Business and Economic applications **Cost Functions Revenue Functions** Relationship between AR & MR The Concept of elasticity

Elasticity of Demand Elasticity of Supply First Derivative Test Higher Order Derivative Test Applications of Maxima and Minima Minimization of Average Cost Maximization of Profit Profit Maximization under perfect competition

10. INTEGRATION

Fundamental Integration formula Methods of Integration Integration by Partial Fraction Important Integrals Integration by Parts Here " becomes the limiting value of the sum. Integration as a summation Properties of Definite integral Definite Integral as an Area under the Curve Application in Commerce and Economics Total Cost function from Marginal Cost Total Revenue function & Demand function from Profit function from Marginal profit function Equilibrium Output Consumption function from Marginal propensity to c Demand Function from Price elasticity of Demand Capital formation Present Value or Discounted Value Rate of Growth or Sales Growth Consumer's Surplus Producer's surplus Consumer's surplus under monopoly Consumer's surplus under Pure competition Learning curve

11. COMMERCIAL ARITHMETIC

To find a definite percentage of a quantity Percentage of one quantity with another quantity Percentage Increase/ Decrease Percentage (profit and Loss) Problems on Percentage (Commission & Discount) Percentage (Mixtures) Simple Interest Compound Interest Continuous compounding Nominal and Effective Rates of Interest Bills Discounting Annuity Sinking Fund Present value of an Ordinary Annuity Formula for present value of an ordinary annuity Amount of Annuity Due Amount of a Deferred Annuity Deferred Annuity Perpetuity The present value of a perpetuity Present value of a deferred Perpetuity

Annex 1

THEORY OF INDICES

Index Indices Law of Indices Law of Multiplication (or Product Law of Component Law of Division or Quotient Law of exponents Negative Index Notes on the operation on Indices Other points on relation of Indices Solution of Exponential Equations Solve the simultaneous equation

Annex 2

LOGARITHM

Logarithm of a number Properties of Logarithms