Integral calculus (only one DVD)	
Indefinite integral	What is Integration, What is Geometrical Significance, What is the Importance of constant 'C', Fundamental Integration Formulas, What are the various Operations on Integration. Integration by Substitution, Integral of the form, Integral of the form. Some special Integrals, Some Important Substitutions, Integration of The Type, Integration reducible to type. Integral of the type, Integral reducible of Type. Integration of the type. Integration of type, Integral of the form, Integrals of the form, Integral of the form. What is integration by parts?, Integrals of the type, Integrals of the form. What is rational function?, What are the standard rules for integrating rational functions?, Formula, Integral of the form, Integral of the form.
Definite Integral	What is Definite Integral?, Geometrical Interpretation of Definite Integral, Evaluation of Definite integrals by substitution, Properties of Definite Integrals (Properties I to III), Generalization Properties of Definite Integrals (Properties IV to VII). Properties of Definite Integrals (Properties VIII to XIV).
Area	Enquiry– How it is possible to find the area enclosed by a curve and x-axis?, Enquiry– What about change in sign of area according to the position of curve. (Above or below x axis), Shaded portion ($P_1P_2Q_2Q_1$), .
Differential Equation	Order and degree of a differential equation, Linear & Non-Linear Differential equation, Solution of a differential equation, Formation of differential equation, Algorithm for formation of differential equation. Method of solving a first order of degree differential equation, Reducible to variables separable, Homogeneous Equations, To solve homogeneous differential equations, Solution of linear differential of first order, Linear differential equations of the form, Equations reducible to linear form..

Vector and 3d Geometry (only one DVD)	
Vectors	Definitions, Null vector, Unit vector, Like/Unlike vectors, Parallel vectors, Position vector, Collinear vectors, Coplanar vectors, Co-initial vectors, Free vectors, Localised vectors, Equal vectors,Polygon law of addition, Vector Addition, Multiplication Vector, Position Vector of a Point. Section Formula, Internal division, External division, Coplanar Vectors, Components of a Vector in Two Dimension, Components of a Vector $(AB)^{\rightarrow}$ in terms of Co-ordinates of A and B, Addition, Subtraction Multiplication of a Vector by Equality in Terms, Components of a Vector in Three Dimensions, Co linearity of Vectors, Co linearity of Points, Linearly Dependent and Independent Vectors. Product of Two Vectors, Scalar (or Dot) product of two vectors, Properties of Scalar product, Application of Dot Product on Plane Trigonometry. Vector (or Cross) Product of two Vectors, Properties. Scalar Triple Product, Properties, Vector Triple Product, Tetrahedron, Then the following properties hold.
Three Dimensional Co-ordinate System	Three Dimensional Co-ordinate System Position vector of a point on space, G Signs of Co-ordinates of a Point in Various Octants, Distance Formula, Section Formula, Direction Cosines and Direction Ratio's of a Vector, Co-ordinates of P are $(r\cos\alpha, r\cos\beta, r\cos\gamma)$,, Direction Ratios, Directions cosines of parallel vectors, Angle between two vectors in terms of direction cosines and direction ratios Straight Line, Cartesian equation of straight line, Cartesian form, Perpendicular distance of a point from a line (Cartesian form) (Vector form), Reflection or image of a point in a straight line (Cartesian form) (Vector form), kew Lines.
Plane	Plane, Equation of a plane passing through a given point, Intercept form of a plane, Vector equation of a plane passing through a given point and normal to a given vector, Cartesian form. Equation of plane in normal form vector form, Cartesian form, Angle between the two planes, Angle between a line and a plane, Equation of Plane forming through three given points, Cartesian equivalence, Equation of plane that passes through a point A with position vector $a^{\rightarrow}$ and is parallel to given vector $(b)^{\rightarrow}$ and $(c)^{\rightarrow}$, Cartesian form, Equation of any Plane Passing through the Line of Intersection of Plane, +++= and +++=is (+++)+(+++–=), Vector form, Two Sides of a Plane. Distance of a Point from a Plane, Vector form, Cartesian form, Equation of the Planes Bisecting the Angle between two Planes, Vector form, Bisector of the angle between the two planes containing the origin, Bisector of the acute and obtuse angles between two planes, Intersection of a line and a plane, Condition for a line to lie parallel to a plane.
Sphere	Definition, Equation of a sphere, Equation of a sphere passing through four non-coplanar points.

Trigonometry (only one DVD)	
Trigonometric Functions and Identities	Trigonometric Ratio and Identities Angle and its Measurement, Measurement of an Angle, Sexagesimal System (degree measure), Centesimal System (grade measure), Circular System (radian measure), Number of radians in an Angle subtended by an Arc of a Circle at the Centre, Definitions of Trigonometric Ratio or Circular Functions, Coplanar vectors, Signs of Trigonometric Ratios, Trigonometrical Identities, Trigonometric Ratio of Standard Angles, Allied Angles. Trigonometrical Rations of Angle($90^o - \theta$) in Terms of θ, Trigonometrical Rations of ($90^o + \theta$) in Terms of θ, Trigonometrical Rations of ($180^o - \theta$) in Terms of θ, Trigonometrical Rations of ($180^o + \theta$) in Terms of θ, Trigonometrical Rations of ($360^o - \theta$) in Terms of θ, Trigonometric Rations of Compound Angles, The Addition Formulae, Subtraction Formulae, Transformation Formulae, Trigonometric Rations of Multiple Angles, Trigonometric Rations of Sub multiple of an Angle. Identities, Graphs of Trigonometric Functions, Trigonometric Functions and Identities, Maximum and Minimum Values of Trigonometrical Functions Trigonometry.
Trigonometric Equation	Trigonometric Equations and Inequations, Properties and Solutions of Triangles, Napier's analogy. Straight Line, Cartesian equation of straight line, Cartesian form, Perpendicular distance of a point from a line (Cartesian form) (Vector form), Reflection or image of a point in a straight line (Cartesian form) (Vector form).
Logarithms and Their Properties	Logarithmic Function, Graph of Logarithmic Function, Properties of Logarithmic Function, Changing of Base.

Coordinate Geometry	
Coordinate Systems and Coordinates (DVD -1)	Co- ordinate Axes, Rectangular Cartesian co – ordinates of a point, Distance Between Two Points. Section Formulae, Formula For Internal Division, Formula For External Division. Centroid of a Triangle, Incentre, Circumcentre of a Triangle, Area of a Triangle. Locus and Its Equation, Equation of a locus, Change of Axes or the Transformations of Axes, Removal of the term xy from f $(x, y) = ax^2 + 2hxy + by^2$ without changing the origin.
The Straight Lines (DVD-1)	Angle of inclination of line, Slope of gradient of a line, Angle between two lines, Line parallel to co – ordination axes. Intercepts of a line on axis, Different forms of the equation of a straight line. Reduction of general equation to standard form, The distance form or symmetric form or parametric form of a line Theorem, Position of a point relative to a line, Position of two points relative to a given line, Distance of a point from a line, Working Rule, Distance between two parallel lines. Area of parallelogram, Point of intersection of two lines, Concurrent lines, Family of lines, How to find Circumcentre and orthocenter by slopes, How to find Orthocenter, line equally inclined with two lines. Equation of the bisectors, Bisector of the angle containing the origin, Working Rule, Equation of that bisector of the angle between two lines which contains a given point, How to distinguish the acute (internal) and obtuse (external) angle bisectors, Short cut method for finding acute (internal) and obtuse (external) angle bisectors, REFLECTION Image or reflection of a point (x_1, y_1) about a line mirror, Optimization (Minimization or Maximization).
The Pairs of Straight Lines (DVD-1)	Pair of Straight Line, Homogeneous Equation in Two Variables, Two Very Useful Identities, Angle between the pair of straight line $y = m^2x$ and $ax^2 + 2hxy + by^2 = 0$, Bisectors of the Angle Between the Lines Given by a Homogeneous Equation. General Equation of Second Degree, Important Facts, To find the two lines, Angle, Removal of First Degree Terms, Removal of XY term: Rotate the axis with angle θ, Equation of the lines joining the origin to the points of intersection of a given line and a given curve, Curve.
Circles (DVD-1)	Circle, Equation of a Circle, Chord and Diameter, Equation of Circles in Different Forms, General Form, Rule For Finding the Centre and Radius of a Circle, Parametric Form, General Form, Conditions For a Circle, Nature of the Circle, Concentric Circle. Diameter Form of a Circle, Equation of Circle Passing Through Three Non-Collinear Points, Cyclic Quadrilateral, Intercepts Made on the Axes by a Circle, Different Form of the Equation of a Circle. Position of a Point With Respect to a Circle, Maximum and Minimum Distance of a Point From the Circle, Intersection of a Line and a Circle, Product of Algebraic Distances PA and PB is the constant when from P, A secant be drawn to cut the circle in the points A, B, Length of intercept cut off from a line by a circle, Tangent to a Circle at a Given Point, Wrong Process, Find its tangent only by calculus.

	Parametric Forms, Normal to a Circle at a Given Point, Different Forms, Tangents From a Point to a Circle. Power of a Point With Respect to a Circle, Chord of Contact, Definition, Chord Bisected At Given Point. Pair of Tengents, Director circle, Diameter of A circle, Pole and Polar, Coordination of pole of a line, Properties. Two Circle Touching Each Other, Common tangents to two circles, How to find the direct common tangents, How to find transverse common tangents, Transverse imaginary, Common chord of two circles, Length of common chord. Family of Circles, Angle of intersection of two circles, Radical Axis, Some properties of radical axis, Radical Centre, Coaxial System of Circles, Limiting Point.
Parabola (DVD-1)	Conic Section, Recognisation of Conics, Standard Equation of Parabola. General Equation of Parabola, The Generalised Form, Parabolic Curve, Position of a Point (x_1, y_1) with respect to a Parabola $y^2 = 4ax$, Parametric Relation Between the Co-ordinates of the Ends of a Focal Chord of a Parabola. Intersection of a Line and a Parabola, Condition for Tangent, The Point of Contact, Equation of Tangent in Different Forms, Point of Intersection of Tangents at Any Two Points of the Parabola. Equations of Normals in Different Forms, Point of intersection of normals at any two points on the parabola, Relation between 't_1' and 't_2' If Normal at 't_1' Meets the Parabola at 't_2' Again, Co – Normal Points, Pair of Tangents, Chord of Contact: T = 0, Chord Bisected at a Given Point (Middle Point Chord) $T=S_1$, Circle Through Co – Normal Points, Diameter, Lengths of Tangent, Subtangent, Normal and Subnormal, Reflection Property of a Parabola.
Ellipse (DVD-2)	Ellipse Definition, Standard Equation of Ellipse, Length of the Latus Rectum, Focal Distance of a Point, Another Definition of Ellipse. The shape of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1, when\ b\ >\ a,$ Position of a point with respect to an ellipse, Intersection of a line and an ellipse, Condition of tangency. Equation of Tangent in Different Forms, Equation of Normal in Different Forms, Properties of Eccentric Angles of the Co – Normal Points, Pair of Tangents. Chord of Contact, Chord Bisected at a Given Point, Director Circle, Sub – Tangent and Sub – Normal, Reflection Property of an Ellipse, Equation of an ellipse referred to two perpendicular lines, Centre.
Hyperbola (DVD-2)	Hyperbola, Standard Equation of Hyperbola, General Equation, The Foci and Directrix of a Hyperbola, Length of Latus Rectum. Focal Distance, Conjugate Hyperbola, Position of a Point With Respect To a Hyperbola, Inter section of a line y = mx + c and a Hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$, Condition for Tangency, Point of contact. Equations of Tangent in Different Forms, Equation of Normal in Different Form, Pair of Tangent, Chord of Contact, Chord Bisected at a Given Point (Middle Point Chord),

	Diameter, Conjugate Diameters. Director Circle, Sub Tangent and Sub Normal, Co – Normal Points, Asymptotes, Method to Find, The Rectangular Hyperbola $xy = c^2$, Properties of Rectangular Hyperbola $xy = c^2$, Reflection Property of a Hyperbola.

Algebra	
Complex Number (DVD-1)	Complex Numbers, Sum of two complex numbers, Product of two complex numbers, Difference of two complex numbers, Division of two complex numbers, Modulus and argument of a complex number, Polar form of a Complex Number, The geometrical representation of complex numbers, Vector representation of complex numbers, Conjugate to complex numbers, The following relations be committed to memory. Mehod for square root of a complex numbers, Cube roots of unity $1, \omega, \omega^2$. De-Moivre's Theorem, n-th roots of a complex number, Representation of roots of unity, Common properties of roots of unity. Properties of Moduli, Properties of Arguments, Some useful formulae for Modulus and Amplitude. Concept on Anti-clockwise rotation, General formula for rotation, Passage type questions.
Theory of Quadratic Equations (DVD-1)	Roots of the equation, Sum and Product of the roots, To find the equation whose roots are α and β, Nature of the roots, Sign of the expression, Modulus Function, Greatest Integer function, Common roots, Inequalities, Certain important definitions.
Permutations and Combinations (DVD-1)	Definitions of Permutation, Definitions of Combination, Fundamental Theorem, Important Results. Other Important Concepts on Permutations and Combinations.
Probability (DVD-1)	Some Definitions, Sample Space, Event, Mutually Exclusive Events, Equally Likely Events, Exhaustive Events, Classical Definition of Probability, Odds in favour and odds against an event, Axiomatic approach to probability Theory, Axioms of Probability, Conditional Probability, Multiplication Theorem, Independent events, Important Remarks, Partition of a sample Space, Theorem of Total Probability for Compound Events, Binomial Distributions, Theorem, Use of Multinomial Theorem, Alternative Concept of Inverse Probability (Baye's rule).
Progressions & Series (DVD-2)	Arithmetical Progression, Geometrical Progression, Definition, nth term of a G.P., Sum of n terms of a G.P., Single Geometric Mean Between a and b, Product of n geometric means = G^n, An Important Note. Arithmetic-geometric series, Definition, Natural Numbers, Method of difference, Harmonical Progression (H.P.), nth term of H.P., Harmonic mean (single), n Harmonic Means Between a and b, Relations between A, G and H.
Binomial Theorem (DVD-2)	Statement of binomial theorem for positive integral index, General term, T_{r+1}, Binomial coefficients of terms equidistant from the beginning and the are equal, Number of terms and middle term, Values of Binomial Coefficients, Term containing xr will occur in T_{r+1} for $(1 + x)^n$ and it will be ${}^nC_r\, x^r$, Term independent of x in the expansion of $(x + a)^n$, Terms equidistant from the beginning and end of the binomial expansion $(x+a)^n$.
Determinants (DVD-2)	Definition, Aid to memory, Rule, Expansion with respect to first column, Properties. Cofactor and Minors, Differentiation of a determinant, Integration of a Determinant, Factor of certain standard determinants. Remember the results, System of linear

	Equations, Non – homogeneous Equations in two unknowns, Homogeneous linear equation in two unknowns, Non – homogeneous linear equations in three unknowns, Homogeneneous linear equation, Three equations in two unknowns, Gist of discussion in simple language.
Matrices (DVD-2)	Definition, Various Types of Matrix, Properties of Matrix Multiplication. Various Kinds of Matrices, The Transpose of Matrix, Properties of Transpose, Symmetric Matrix, Definition of Adjoint of a Matrix, Working rule for finding the adjoint of A, Rule to write the cofactor of an element aij, The Inverse of Matrix, Properties, Inverse of a matrix is unique, Rank of a Matrix, Sub –matrix of order r, The rank of a given matrix A is said to be r if, Working Rule, Solution of Equations, Representation of equations in matrix form, Nature of Solution,
Mean and Variance (DVD-2)	Introduction, Discrete Random Variable, Probability Distribution, Probability Distribution, Mean of a Discrete Random Variable, Variance of a Discrete Random Variable.
Linear Programming (DVD-2)	Introduction, Discrete Random Variable, Probability Distribution, Probability Distribution, Mean of a Discrete Random Variable, Variance of a Discrete Random Variable. Some Definitions and Results, Feasible Solution, Infeasible solution, Feasible Region, Optimal Feasible Solution, Convex Set, Theorem, Fundamental Extreme point Theorem, Graphical Methods of Solving Linear Programming Problems, Corner-Point Method, Iso-Profit or Iso-Cost Method, Different Types f linear Programming Problems, Diet Problems, Optimal Product Line Problems, Transportation Problems.

Differential Calculus	
Fundamentals and Functions (DVD-1)	Fundamentals, Basic Definitions, CLOSED AND OPEN INTERVALS, Modulus or Absolute Value Function, Generalised Results, Wavy Curve Method/Number Line Rule/ Sign Scheme For Rational Function, Fundamentals Of Quadratic Equations, The sum of several non-negative terms. Definition, Independent and dependent variable, Graphical representation of function, Real Function, Content function, Identity function, Modulus function, Properties of modulus function, The greatest integer function, Properties of greatest integral function, Fractional part function, Properties of fractional part of x, Least integer function, Properties of least integer function, Signum Function, Reciprocal function, Logarithmic function, Exponential function, Square root function, Polynomial function, Rational function, Inverse of trigonometric function, Operations on real function, Composition of functions, Rule for Finding Domain. Monotonic Function, Nature of derivative of function, Nature of derivative, Range, Method to find the range of a function $y = f(x)$, Odd and even function, Odd function, Even Function, Properties of odd and even function, Periodic function, Properties of periodic function, While taking LCM we should always remember. Mapping of Function, Kinds of function, One-one Mapping or injective or monomorphic, Method to check one-one mapping, Number of one – one Mapping, Method to check Many-One, Onto Function or (Subjective), Method of show onto or subjective, Number of onto Functions, Number of one – one onto mapping or bijection, Equal and identical function, Inverse of function, Graph of the inverse of an invertible function, Properties of inverse of a function, Composite functions, The adjacent figure shows the steps to be taken, Properties of Composition of function.
Limit (DVD-1)	Basic concept, Fundamental algebraic operation on limits of function, Standard limits, Indeterminate forms, Sandwich theorem, Some important expansions, Factorization method, Rationalization Method, Based on standard formula. Algebraic function of ∞ type ∞/∞ form, How to solve problems, Trigonometrical Limits, Logarithmic Limits, Exponential Limits. Based on definition of 'e', Evaluation of exponential limits of the form 1^∞, Particular cases, Miscellaneous Forms, Use of Sandwich theorem (Squeeze theorem), Use of Newton-Leibnitz's formula in evaluating the limits, L' Hospital's Theorem, Advance level.
Continuity and Differentiability (DVD-1)	Continuity of a function, Graphical View, Continuity at end points, Jump discontinuity, Properties of continuity function, Differentiability. Differentiability in a set, Some standard results on differentiability.
Differentiation (DVD-2)	Introduction. Derivative of standards functions, Rule (i), Rule (ii) (Product Rule), Generalization of the product rule, Rule (iii) (Quotient rule), Differentiation of a function of a function, Differentiation by using trigonometrical transformations. Differentiation of implicit functions, Logarithmic Differentiation, Differentiation of parametric functions, Differentiation of a function with respect to another function,

	Differentiation of determinants.
Application and Derivatives (DVD-2)	Derivative as a rate measurer, Derivative as the time rate of change, Differentials, Errors and Approximations, Rolle's & Lagrange's Theorem, Rolle's Theorem, Geometrical proof, Lagrange's Theorem, Geometrical interpretation.
Tangents and Normals (DVD-2)	Basic definition, Slope (Gradient) of a line, Slope of a line in terms of coordinates of any two points on it, Slope of a line when its equation is given, Angle between two lines, Equation of a straight line.
Monotonicity (DVD-2)	Monotonic function. Properties of Monotonic Functions, Advance level Include Subjective type questions.
Maxima Minima (DVD-2)	Definition, Maxima and Minima at end point, Method of finding extrema of continuous functions, Method of 2nd derivative, Concept of Global Maximum / Minimum, Global Maximum / Minimum in [a, b], Global Maximum / Minimum in (a, b). Applied problems in maxima and minima. Maxima and Minima in Discontinuous Function, Minimum of discontinuous functions, Maximum of discontinuous functions, Method of finding the greatest and least values of a continuous function.
Graphical Transformation (DVD-2)	Some Standard Graphs, Straight Line, Ellipse, Hyperbola, Rectangular Hyperbola, Transformation of Graphs, How to draw graph of Polynomial, Draw the graph, Plotting graph of $f(x - [x])$,