**CORE MATHEMATICS TOPICS AND SUB-TOPICS**

**SETS AND OPERATIONS ON SETS**

* Finding the number of subsets in a set with n elements
* Properties of Set Operations- Commutativity Associativity Distributivity
* Description and identification of the regions of Venn diagrams using set operations
* Three-set problems using Venn diagrams

**REAL NUMBER SYSTEM**

* Rational and irrational numbers
* Real Numbers on the number line
* Comparing and ordering rational numbers
* Approximating and rounding off numbers
* Significant figures
* Recurring decimals
* Standard form
* Properties of operations Commutative property Associative Property Distributive Property
* Binary operations

**ALGEBRAIC EXPRESSIONS**

* Algebraic expressions
* Operations on algebraic expressions
* Binomial expressions
* Factorization
* Difference of two squares
* Operations on algebraic fractions with monomial denominators
* Zero or Undefined algebraic fractions

**SURDS**

* Simplifying surds.
* Addition, subtraction and multiplication of surds.
* Rationalization of surds with monomial denominators.

**NUMBER BASES**

* Converting base ten numerals to numerals in other bases and vice versa.
* Equations involving number bases
* Operations on numbers involving number bases other than base ten.

**RELATIONS AND FUNCTIONS**

* Types of relations
* Functions
* Mapping
* Graphs of Linear Functions
* Gradient of a straight line
* Equation of a straight line
* Magnitude of a line segment
* Graphs of Quadratic functions

**PLANE GEOMETRY I**

* Angles at a point
* Parallel lines Relationships between corresponding angles, vertically opposite angles, alternate angles and adjacent angles, supplementary angles
* Exterior angle theorem
* Special triangles Isosceles and equilateral triangles
* Right–angled triangle
* Quadrilaterals
* Polygons

**FORMULARS, LINEAR EQUATIONS AND INEQUALITIES**

* Formula
* Change of subject of an equation
* Solution sets of linear equations in one variable
* Word problems involving linear equations in one variable
* Linear inequalities in one variable
* Word problems involving linear inequalities in one variable

**BEARINGS AND VECTORS IN A PLANE**

* Bearing of a point from another.
* Distance-bearing form
* Reverse bearing
* Scalar and vector quantities
* Vector notation and representation
* Addition and subtraction of vectors
* Multiplying a vector by a scalar
* Column vectors
* Triangle law of vectors
* Equal and Parallel vectors
* Negative vectors
* Magnitude and direction of a vector

**STATISTICS I**

* Frequency distribution tables
* Data presented in tables
* Graphical representation of data
* Mean of a distribution

**RIGID MOTION I**

* Translation by a vector.
* Reflection in a line.
* Characteristics of reflection

**RATIO AND RATES**

* Ratio
* Scales
* Foreign exchange
* Rates
* Travel Graphs.
* Population Density.

**PERCENTAGES I**

* Comparison by percentages
* Discount, Commission, Simple Interest.
* Hire Purchase.

**MODULAR ARITHMETIC**

* Calculation of a number for a given modulo.
* Addition () and multiplication () tables in given modulo.

**INDICES AND LOGARITHMS**

* Laws of indices.
* Solving equations involving indices.
* Relating indices to logarithms in base ten
* Anti-logarithms of given numbers.

**SIMULTANEOUS LINEAR EQUATION**

* Graphical method for solving linear equations in two variables
* Elimination and substitution methods for solving linear equations in two variables
* Solving word problems involving simultaneous linear equations in two variables

**PERCENTAGES II**

* Compound interest for a given period. (Up to 4 years)
* Depreciation.
* Financial Partnership
* Interest (Profit) on capital
* Banking
* Income Tax
* Value Added Tax (VAT)
* Household bills

**VARIATION**

* Direct variation
* Solving problems involving direct variations
* Indirect variations (inverse variations)
* Solving problems involving joint variations.
* Partial variations.

**STATISTICS II**

* Histogram
* Mean
* Cumulative Frequency Curves (Ogive).
* Standard deviation and Variance

**PROBABILITY**

* Sample Space of simple experiments
* Sample Space of compound experiment.
* Probability of an event
* Addition law for mutually exclusive events.
* Multiplication law for independent events.

**QUADRATIC FUNCTIONS AND EQUATIONS**

* Solving quadratic equations by factorization
* Graphical solution of quadratic equations
* Minimum and maximum values and points of quadratic graphs.
* Minimum and maximum values and points of quadratic graphs.
* Solving linear and quadratic equations using graphs
* Solving related quadratic equations
* Increasing/Decreasing values of quadratic graphs.
* Positive/Negative values of quadratic graph.

**MENSURATION I**

* Length of an arc.
* Perimeter of plane figures
* Areas of sectors and segments.
* Areas of quadrilaterals

**PLANE GEOMETRY II (CIRCLES)**

* The Circle as a Locus.
* Circle Theorems
* Perpendicularity of Tangent and Radius of a Circle
* Angle between Tangent and a Chord.
* Tangents from an External Point.

**TRIGONOMETRY I**

* Tangent, sine and cosine of acute angles.
* The trigonometric ratios of 30º, 45º and 60º.
* The use of calculators to read sine, cosine and tangent of angles between 0º and 360º
* Inverse of trigonometric ratios.
* Angles of elevation and depression.
* Application of trigonometric ratios.

**SEQUENCES AND SERIES**

* Patterns of sequence
* Arithmetic Progression
* Sum of the first n terms of an AP.
* Geometric Progression (or Exponential sequence)
* General term of a GP

**RIGID MOTION II AND ENLARGEMENT**

* Rotational symmetry
* Rotation
* Enlargement
* Scale drawing
* Areas and Volumes of similar figures.

**CONSTRUCTION**

* Construction of 75o 105o 135o and 150o
* Construction of Triangles and Quadrilaterals.
* Constructing loc

**MENSURATION II (SURFACE AREA, VOLUME OF SOLIDS AND THE EARTH AS A EARTH)**

* Nets of prisms.
* Surface Areas of Prisms.
* Volume of prisms Surface
* Area of a Cone
* Volume of a Cone.
* Surface Area of a Pyramid.
* Volume of a pyramid.
* Surface area of a sphere
* Volume of a sphere Distances of arcs of spheres

**LOGICAL REASONING**

* Statements
* Negation of statements
* Implications
* Validity of implications

**TRIGONOMETRY II**

* Graphs of trigonometric functions
* Trigonometric equations