GTSE SYLLABUS
The question will be based on the concept of the following syllabus

CLASS VII - MATHS

CLASS – VII

Number System

i) **Knowing our Numbers:**
   - **Integers**
     - Multiplication and division of integers (through patterns).
     - Division by zero is meaningless
     - Properties of integers (including identities for addition & multiplication, *commutative, associative, distributive*) (through patterns). These would include examples from whole numbers as well. Involve expressing commutative and associative properties in a general form. Construction of counterexamples, including some by children. Counter examples like subtraction is not commutative.
     - Word problems including integers (all operations)
   
   ii) **Fractions and rational numbers:**
     - Multiplication of fractions
     - Fraction as an operator
     - Reciprocal of a fraction
     - Division of fractions
     - Word problems involving mixed fractions
     - Introduction to rational numbers (with representation on number line)
     - Operations on rational numbers (all operations)
     - Representation of rational number as a decimal.
     - Word problems on rational numbers (all operations)
     - Multiplication and division of decimal fractions
     - Conversion of units (length & mass)
     - Word problems (including all operations)

   iii) **Powers:**
     - Exponents only natural numbers.
     - Laws of exponents (through observing patterns to arrive at generalisation.)
     - \(a^m \cdot a^n = a^{m+n}\)
     - \((a^m)^n = a^{mn}\)
     - \(\frac{a^m}{a^n} = a^{m-n}, \text{where } m, n \in \mathbb{N}\)

Algebra

**Algebraic expressions**
- Generate algebraic expressions (simple) involving one or two variables
- Identifying constants, coefficient, powers
- Like and unlike terms, degree of expressions e.g., \(x^2y\) etc. (exponent \(\leq 3\), number of variables )
- Addition, subtraction of algebraic expressions (coefficients should be integers).
- Simple linear equations in one variable (in contextual problems) with two operations (avoid complicated coefficients)

Ratio and Proportion
- Ratio and proportion (revision)
- Unitary method continued, consolidation, general expression.
- Percentage- an introduction.
- Understanding percentage as a fraction with denominator 100
- Converting fractions and decimals into percentage and vice-versa.
- Application to profit and loss (single transaction only)
- Application to simple interest (time period in complete years)
Geometry

i) Understanding shapes:
   - Pairs of angles (linear, supplementary, complementary, adjacent, vertically opposite) (verification and simple proof of vertically opposite angles)
   - Properties of parallel lines with transversal (alternate, corresponding, interior, exterior angles)

ii) Properties of triangles:
   - Angle sum property (with notions of proof & verification through paper folding, proofs using property of parallel lines, difference between proof and verification.)
   - Exterior angle property
   - Sum of two sides of a it’s third side
   - Pythagoras Theorem (Verification only)

iii) Symmetry
   - Recalling reflection symmetry
   - Idea of rotational symmetry, observations of rotational symmetry of 2-D objects. (900, 1200, 1800)
   - Operation of rotation through 900 and 1800 of simple figures.
   - Examples of figures with both rotation and reflection symmetry (both operations)
   - Examples of figures that have reflection and rotation symmetry and vice-versa

iv) Representing 3-D in 2-D:
   - Drawing 3-D figures in 2-D showing hidden faces.
   - Identification and counting of vertices, edges, faces, nets (for cubes cuboids, and cylinders, cones).
   - Matching pictures with objects (Identifying names)
   - Mapping the space around approximately through visual estimation.

v) Congruence
   - Congruence through superposition (examples blades, stamps, etc.)
   - Extend congruence to simple geometrical shapes e.g. triangles, circles.
   - Criteria of congruence (by verification) SSS, SAS, ASA, RHS

vi) Construction (Using scale, protractor, compass)
   - Construction of a line parallel to a given line from a point outside it.(Simple proof as remark with the reasoning of alternate angles)
   - Construction of simple triangles. Like given three sides, given a side and two angles on it, given two sides and the angle between them.

Mensuration

   - Revision of perimeter, Idea of, Circumference of Circle

Area

   - Concept of measurement using a basic unit area of a square, rectangle, triangle, parallelogram and circle, area between two rectangles and two concentric circles.

Data Handling

i) Collection and organisation of data – choosing the data to collect for a hypothesis testing.

ii) Mean, median and mode of ungrouped data – understanding what they represent.

iii) Constructing bargraphs

iv) Feel of probability using data through experiments. Notion of chance in events like tossing coins, dice etc. Tabulating and counting occurrences of 1 through 6 in a number of throws. Comparing the observation with that for a coin. Observing strings of throws, notion of randomness.