The entrance test is based on the courses of study and syllabi of 10th class. It is given as under along with broader weightage of each subject in the question paper of entrance test as shown below :-

ENGLISH: (15Marks)

There shall be 15 objective type questions each of 1 marks

1. Pronouns-type & Uses 2. Conjunction-types & Uses 3. Models-modal auxiliaries & their Uses 4. Reported speech-changes in verbs and other changes 5. Clauses-Types of clauses and their uses 6. Sentence Patterns 7. Past perfect-uses 8. To-infinitive and-hing forms 9. Other Sentence patterns

PHYSICS: (15 Marks)

There shall be 15 objective type questions each of 1 marks

UNIT-1 Light-Reflection and Refraction

- Reflection of Light, spherical mirrors; Image formation; uses of spherical mirrors.
- Sign conventions for spherical mirrors; relation between focal length and radius of
- curvature; mirror formula (only relation) (Numerical problems); magnification.
- Refraction of Light, refraction through a glass slab, refractive index, Conditions for no
- refraction.
- Spherical Lenses, Image formation, sign conventions, lens formula (only relation) (Numerical problems), Magnification (Numerical problems), power of lenses (Numerical problems).

UNIT-2 The Human Eye and the Colorful World

- Human eye; power of accommodation; defects of vision and their correction.
- Glass prism (refraction and dispersion)
- Atmospheric refraction-twinkling of stars and color of sun at sun rise and sun set.

UNIT-3 Electricity

- Concept of electric charge;
- Electric current; electric potential and potential difference;
- Ohm's law and experimental verification; resistance and its dependence; combination of resistances (in series and in parallel) (Numerical Problems)
- Heating effect of current-Electric power and energy (Numerical Problems)

UNIT-4 Magnetic Effects of Current:

- Orested Experiment; Magnetic field and field liners.
- Magnetic field due to a current carrying-Straight, coil (loop) and solenoid (qualitative only).
- Force on a current carrying conductor in a magnetic field.

- Electric Motor; Domestic electric circuits

UNIT-5 Sources of Energy:

- Various sources of energy; Conventional sources of energy; improvement in technology for using conventional sources of energy (Biomass and wind energy).
- Non-conventional sources of energy (Solar energy, Energy from sea).
- Nuclear energy (Nuclear fusion and nuclear fission).
- Lasting of energy sources.

CHEMISTRY: (15 Marks)

There shall be 15 objective type questions each of 1 marks

UNIT-1 Chemical Reactions and Equation

- Chemical equation, writing of chemical equation; Balancing chemical equations.
- Types of chemical reactions; Viz. Combination reactions; Decomposition reactions;
- Displacement reactions; Double displacement reactions; Oxidation and reduction.
- Effects of oxidation and reduction reactions in everyday life, viz. corrosion and rancidity

UNIT-2 Periodic Classification of Elements

- Early attempts regarding classification of elements; like 0'Debernier triads, New lands law of octaves (Non evaluating)
- Mandleev's periodic table its achievements and limitations.
- Modern periodic table; position of elements trends in modern periodic table viz. valancy, Atomic size, Metallic and non-metallic properties

UNIT-3 Carbon and its compounds

- Bonding in Carbon, Covalent bond, Allotropes of carbon;
- Versatile nature of carbon; Saturated and unsaturated hydrocarbons; chains; Branches and rings; homologous series and its characteristics; nomenclature of Carbon compounds.
- Chemical properties of carbon compounds viz. combustion; oxidation; Addition and substitution reactions.
- Important Carbon compounds like Ethane and Ethanoic acid. Properties of Ethanol and Ethanoic acid.
- Soaps and Detergents.

UNIT-4 Metals and non-metals

- Physical properties of metals and non-metals.
- Chemical properties of metals like action of water, air, acids, salts; Reactivity series of metals.
- Cause of reactivity of metals and non-metals. Properties of ionic compounds.
- Occurrence of metals; their extraction, enrichment of ores, Extraction of metals in accordance with activity series; refining of metals.
- Corrosion of metals and its fermentation.

UNIT-5 Acids bases and salts

- Idea about acids and bases; chemical properties of acids and bases viz. Action of metals, metal carbonates, metal hydrogen carbonates (only in case of acids), metallic acids; non-metallic acids and bases.
- Similarities in acids and bases; reaction of acids and bases with water.
- Strength of acids and base solutions; pH and its importance.
- Idea of salts, their family and pH. Chemicals from common salts like Sodium Hydroxide, Baking soda and Washing soda; Hydrated salts, plaster of Paris.

MATHEMATICS: (15Marks)

There shall be 15 objective type questions each of 1 marks

UNIT-1 Real Numbers

Euclids division lemma, Fundamental Theorem of Arithmetic, Statements after reviewing work done earlier and after illustrating through examples, Proofs of results irrationality of $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$ decimal expansion rational numbers in terms of terminating/ non terminating recurring decimals.

Arithmetic Progression

Motivation for studying Arithmetic progression, Derivation of standard results

UNIT-2 Pair of linear equation in two variables

Pair of linear Equation in two variables. Algebraic conditions for number of solutions. Solutions of pair of linear equations in two variables algebraically by substitution, by elimination and by cross multiplication. Simple situational problems may be included. Simple problems on equations reducible to linear equation may be included.

UNIT-3 Polynomials

Zeroes of a Polynomial, Relationship between zeroes and coefficients of polynomial with particular reference to quadratic polynomials, Statement and simple problems on division algorithm for polynomials with real coefficients.

Quadratic Equations

Standard form of Quadratic equation $ax2+bx+c=0,(a=0)$, solution of quadratic equation (only real roots) by factorization any by completing the square, i.e.by using quadratic formulas, relationship between discriminant and nature of roots. Problems related to day to day activities to be incorporated

UNIT-4 Triangles

Definitions, examples counterexamples of similar triangles:

- (Prove): If a line is drawn parallel tone side of a triangle to intersect the other two sides in distance points, the other two sides are divided in the same ratio.

- (Motivate): if a line divides two sides of a triangle in the same ratio, the line is parallel to third side.
- (Motivate): If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangle are similar.
- (Motivate): If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.
- (Motivate): If one angle of a triangle is equal to one angle of another triangle and the sides including these angles re proportional, the two triangles are similar.
- (Motivate): If a perpendicular is drawn from the vertex of the right angle to the hypotenuse, the triangle on each side of the perpendicular are similar to the whole triangle and to each other.
- (Prove): The ratio of the areas of two similar triangles is equal to the ratios of the squares on their corresponding sides.
- (Prove): In a right triangle, the square on the hypotenuse is equal to the sum of the square on the other two sides.
- (Prove): In a triangle, if the squares on one side are equal to sum of the squares on the two sides, the angles opposite to the first side is a right triangle.

Circles

- Tangents to a circle motivated by chords drawn from points closer and closer to the point.
- Prove: The tangent at any point of a circle is perpendicular to the radius through the point of contact.
- Prove. The length of tangents drawn from external points to a circle is equal.

Constructions

- Division of a line segment in a given ratio (internally)
- Tangent to a circle from a point outside it.
- Construction of a triangle similar to a given triangle

.UNIT-5Coordinate Geometry

Lines (in two dimensions)

Review the concepts of coordinate geometry done earlier including graphs of linear equations. Awareness of geometrical representation of quadratic equations polynomials, Distance between two points and section formula (internal). Area of a triangle.

UNIT-6 Introduction to Trigonometry

Trigonometric ratios of an acute angle of a right angled triangle. Proof of their existence (well defined); motivate the ratios, whichever are defined at 0' and 90'.

Values with proofs of the trigonometric ratios of 30',45' and 60'. Relationship between the ratios.

Trigonometric identities, Proofs and applications of the identity $\mathrm{Sin}\,2A + \mathrm{Cos}2A =$
1, only simple identities to be give. Trigonometric ratios of complementary angles.

Heights and Distances :

Simple and believable problems on heights and distances. Problems should not involve more than two right triangles. Angle of elevation/ depression should be only 30 , 45 ,60 .

UNIT-7 Surface Areas and Volumes

- Problems on finding surface areas and volumes of combinations of any two of the following cubes, cuboids, spheres, hemispheres and right circular cylinders/ cones, frustum of a cone.
- Problems involving converting one type of metallic solid into another and other mixed problems. Problems with combination of not more than two different solids be taken.

Probability

- History, Repeated experiments and observed frequency approach to probability focus is on empirical probability.
- Classical definition of probability, Simple problems on single event, not using set Rotation.