BIRLA HIGH SCHOOL - MUKUNDAPUR

SYLLABUS FOR ADMISSION TEST FOR ADMISSION TO CLASS XI 2027-28

PHYSICS

1) LIGHT (REFLECTION AND REFRACTION)

Natural Phenomena Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula, magnification. Refraction; Laws of refraction, refractive index.

Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula Magnification. Power of a lens.

2) THE HUMAN EYE AND THE COLOURFUL WORLD

Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses. Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

3) ELECTRICITY

Effects of Current Electric current, potential difference and electric current. Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends.

Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

CHEMISTRY

1. CHEMICAL REACTIONS AND EQUATIONS:

Chemical reactions, Chemical equation, balanced chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, endothermic and exothermic reactions, oxidation and reduction.

2. ACIDS, BASES AND SALTS:

Acids and Bases – definitions in terms of furnishing of H + and OH – ions, identification acids and bases using indicators, chemical properties, examples and uses, neutralization, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide, Bleaching Powder, baking soda, Washing soda and Plaster of Paris.

3. METALS AND NON-METALS: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

MATHEMATICS	MATHEMATICAL APTITUDE
1. Polynomials: Zeroes of a polynomial. Relationship between zeros and coefficients of quadratic polynomials. **2. Pair of Linear Equations in Two Variables:** Pair of linear equations in two variables and graphical method of their solution, consistency/inconsistency. Word problem Solution of a pair of linear equations in two variables algebraically - by substitution, by elimination. **3. Quadratic Equations:** Standard form of a quadratic equation $ax^2 + bx + c = 0$, $(a \neq 0)$. Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula. Relationship between discriminant and nature of roots. Problem sums on Quadratic Equation. **4. Arithmetic progressions:** Derivation of the nth term and sum of the first n terms of A.P. and their application. **5. Introduction to Trigonometry:** Trigonometric ratios of an acute angle of a right-angled triangle, relationships between the ratios. Proof and applications of the identity $\sin2A + \cos2A = 1$. **6. Real Numbers:** HCF, LCM of positive integers and word problems, simplification on irrational numbers. **7. Geometry**: Similar Triangles (including Basic Proportionality Theorem): Definitions, examples, counter examples of similar triangles. Application of similar triangles. **8. Probability:** Classical definition of probability. Simple problems on finding the probability of an event. **9.Coordinate Geometry:** Distance and section formula (internal division), mid-point.	**1. Polynomials:** Zeroes of a polynomial. Relationship between zeros and coefficients of quadratic polynomials. **2. Pair of Linear Equations in Two Variables:** Pair of linear equations in two variables and graphical method of their solution, consistency/inconsistency. Word problem, Solution of a pair of linear equations in two variables algebraically - by substitution, by elimination. **3. Quadratic Equations:** Standard form of a quadratic equation $ax^2 + bx + c = 0$, $(a \neq 0)$. Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula. Relationship between discriminant and nature of roots. Problem sums on Quadratic Equation. **4. Arithmetic progressions:** Derivation of the nth term and sum of the first n terms of A.P. and their application. **5. Real Numbers:** HCF, LCM of positive integers and word problems, simplification on irrational numbers. **6. Probability:** Classical definition of probability. Simple problems on finding the probability of an event. **7. Coordinate Geometry:** Distance and section formula (internal division), mid-point. **8. Statistics:** Mean, Median, Mode, using formula.

ENGLISH

Assessment Pattern

1. Comprehension – 22 marks
    - Reading Comprehension – 22 marks (12 + 10)
2. Formal Letter – 7 marks
    - Word limit: 120–150 words
3. Composition – 8 marks
    - Word limit: 150–200 words
4. Factual Description – 5 marks
    - Word limit: approximately 100 words
5. Grammar – 8 marks
6. The grammar section will assess the following areas:
    - Determiners
    - Tenses
    - Modals
    - Subject–Verb Concord
    - Reported Speech:
7. Commands and Requests
8. Statements
9. Questions