

## Important Instructions

1. Immediately fill in the particulars on this page of the Test Booklet with *Blue Ball Point Pen*.
2. The test is of **2:00 hours** duration.
3. No candidate is allowed to carry any textual material, printed or written, bits of paper, pager, mobile phone, any electronic device, etc., except the Receipt, Pen, Pencil etc. and One Pass port size photograph inside the examination hall/room.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only. This space is given at the bottom of each page.
5. A candidate found cheating in examination is liable to disciplinary action including disqualification. All materials and/or devices which are found in violation of any examination rules and regulations will be confiscated.

### English (20 marks)

#### Writing Skills.

- Paragraph, Article writing & speech writing, Letter writing (Formal/Informal)
- Reading Comprehension

### Mathematics

#### UNIT 1:- NUMBER SYSTEMS

##### 1. REAL NUMBER

- L.C.M, H.C.F.
- Fundamental Theorem of Arithmetic - statements after reviewing work done earlier and after illustrating and motivating through examples.

#### UNIT II: ALGEBRA

##### 1. POLYNOMIALS

- Zeros 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.
- Algebraic conditions for number of solutions. Solution of a pair of linear equations in two variables algebraically –
- by substitution, by elimination. Simple situational problems.

##### 3. QUADRATIC EQUATIONS

- Standard form of a quadratic equation  $ax^2 + bx + c = 0$ , Solutions of quadratic equations (only real roots) by
- factorization, and by using quadratic formula. Relationship between discriminant and nature of roots. Situational problems based on quadratic equations related to day to day activities to be incorporated.

##### 4. ARITHMETIC PROGRESSIONS

- Motivation for studying Arithmetic Progression Derivation of the nth term and sum of the first n terms of A.P. and their application in solving daily life problems.

## UNIT III: COORDINATE GEOMETRY

### Coordinate Geometry

Review: Concepts of coordinate geometry, graphs of linear equations. Distance formula. Section formula (internal division).

## UNIT IV: GEOMETRY

### 1. TRIANGLES

Definitions, examples, counter examples of similar triangles.

1. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

2. If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.

(*QUESTIONS BASED ON THESE THEOREMS*)

### 2. CIRCLES

Tangent to a circle at, point of contact

1. (Prove) The tangent at any point of a circle is perpendicular to the radius through the point of contact.

2. (Prove) The lengths of tangents drawn from an external point to a circle are equal.

## UNIT V: TRIGONOMETRY

### 1. 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 of the trigonometric ratios of 30, 45 and 60

. Relationships between the ratios.

### 2. TRIGONOMETRIC IDENTITIES

### 3. HEIGHTS AND DISTANCES:

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

## UNIT VI: MENSURATION

### SURFACE AREAS AND VOLUMES

Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.

## UNIT VII: STATISTICS AND PROBABILITY

### 1. STATISTICS

Mean median and mode of grouped data

### 2. PROBABILITY

Classical definition of probability. Simple problems on finding the probability of an event.

## Section – I (Physics)

### Unit 1:- Light- Reflection and Refraction

Reflection of light, spherical mirrors; image formation; use 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 a lens (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 sunrise and sunset.

### 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(series and parallel) (Numerical Problems)

Heating effect of current – Electric power and energy (Numerical Problems)

## SECTION – II (CHEMISTRY)

### 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:- 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 Ethanol and Ethanoic acid. Properties of Ethanol and Ethanoic acid.

Soaps and Detergents.

### Unit 3: 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 prevention.

## SECTION – III (BIOLOGY)

### Unit 1: - Life Processes

- What are life Processes?
- Nutrition – Autotrophic Nutrition, Heterotrophic Nutrition. How do animals obtain their nutrition?
- Nutrition in Human beings.
- Respiration.
- Transportation: Transportation in Plants.
- Excretion: Excretion in Human beings, Excretion in Plants.

### Unit 2:- Control and Co-ordination

- Animals – Nervous System, What happens in Reflex Action? Human Brain; How are these tissues
- protected? How does Nervous tissue cause action?
- Coordination in Plants, immediate response to stimulus, movements due to growth.
- Hormones in Animals.

## Unit 3 :- How do organism Reproduce.

- Do organisms create exact copies of themselves? The importance of variation.
- Modes of reproduction used by unicellular organisms. Fission. Fragmentation, Regeneration.
- Vegetative Propagation, Budding, Spore Formation.
- Sexual Reproduction: Why the sexual mode of reproduction? Sexual reproduction in flowering plants, Reproduction in human Beings. Male Reproductive System, Female Reproductive System.
- What happens when the egg is not fertilized? Reproductive Health.

### General Knowledge (10 marks)

- Refer NCERT Book
- Similar question will be asked from the Textual and Exercise Questions Paper will have Objective as well as Subjective type Questions.

