

SCIENCE & TECHNOLOGY

CLASS - X

DISTRIBUTION OF MARKS

Physics	26 marks
Chemistry	26 marks
Biology	28 marks
Total	80 marks

PHYSICS

1. REFLECTION AND REFRACTION OF LIGHT

□ Light as Invisible Energy □ Nature of Light □ Reflection of Light □ Position of the Image formed by a Plane Mirror □ Spherical Mirrors and Their Technology □ Sign Conventions for Reflection by Spherical Mirrors □ Refraction of Light □ Refraction by Spherical Lenses □ Power of a Lens □ New Cartesian Sign Convention for Lenses

2. THE HUMAN EYE AND THE COLOURFUL WORLD

□ Human Eye □ Accommodation of the Eye □ Defects of Vision and Their Correction □ Advantages of having two eyes in Humans □ Refraction of Light Through an Equilateral Prism □ Dispersion of White Light by a Glass Prism □ Atmospheric Refraction □ Scattering of Light

3. ELECTRICITY

□ Electric Charges and its Properties □ Conductors and Insulators □ Flow of Electric Charges Electric Current □ Electric Potential □ Electric Circuit □ Resistance of a Conductor or Electric Resistance □ Series and Parallel Circuits □ Ohm's Law □ Expression for Resistances in Series □ Expression for Resistances in Parallel □ Heating Effects of Electric Current

4. MAGNETIC EFFECTS OF ELECTRIC CURRENT

□ Magnetic Field and Field Lines □ Solenoid □ Force on a Current Carrying Conductor in a Magnetic Field □ Electromagnetic Induction □ Domestic Electric Circuits

CHEMISTRY

1. CHEMICAL REACTIONS

□ Introduction □ Chemical Equation □ Types of Chemical Reactions □ Effects of Oxidation Reactions in Everyday Life

2. ACIDS, BASES AND SALTS

□ Introduction □ Understanding the Chemical Properties of Acids and Bases □ What Do All Acids and All Bases have in Common □ How strong are Acid or Base Solutions □ More about salts

3. METALS, NON-METALS AND METALLURGY

□ Physical Properties of Metals and Non-metals □ Formation of Ionic Compounds □ Chemical Properties of Metals □ Specimen Problems □ Occurrence of Metals □ Corrosion of Metals

4. CLASSIFICATION OF ELEMENTS

□ Necessity for Classification of Elements □ Early Attempts for Classification of Elements □ Mendeleev's Periodic Table □ Mendeleev's Periodic Law □ Modern version of Mendeleev's Periodic Table of Elements □ Defects (Limitations) in Modern Version of Mendeleev's Periodic Table of Elements □ Modern Periodic Law □ Long form of Periodic Table □ Position of Hydrogen in the Periodic Table □ Study of Normal Elements of the Periodic Table □ Characteristics of Periods in Long form of Periodic Table □ Characteristics of Groups in Long form of Periodic Table □ Merits of the Long form of Periodic Table □ Defects of the Long form of the Periodic Table □ Advantages of the Long form of the Periodic Table in Learning Chemistry □ Sample Problems

5. CARBON AND ITS COMPOUNDS

□ Introduction □ The Covalent Bond–Bonding in Carbon and other Non-metals □ Versatile Nature of Element Carbon □ Chemical Properties of Carbon Compounds □ Important Carbon Compounds–Ethanol and Ethanoic Acid □ Soaps And Detergents

BIOLOGY

1. LIFE PROCESSES

□ What are life processes? □ Nutrition □ Autotrophic Nutrition □ Heterotrophic Nutrition □ How do organisms obtain their Nutrition? □ Respiration □ Transportation □ Transportation in Human beings □ Transportation in Plants □ Excretion □ Excretion in Human beings

2. CONTROL AND COORDINATION

□ Animals – Nervous system □ Structure of Neuron □ How does an impulse travel in the Body? □ Types of Nervous Actions □ What happens in Reflex Actions? □ Human Nervous System □ How are these tissues protected □ How does the Nervous Tissue cause Action? □ Coordination in Plants □ Immediate response to stimulus □ Movement due to Growth □ Plant Hormones □ Hormones in Animals □ Endocrine Glands in Humans

3. REPRODUCTION IN PLANTS AND ANIMALS

□ Do organisms create exact copies of themselves? □ The importance of variations □ Modes of reproduction used by single organisms □ Fission □ Fragmentation □ Regeneration □ Budding □ Vegetative propagation □ 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 fertilised? □ Reproductive health

4. HEREDITY AND EVOLUTION

- Accumulation of variation during reproduction
- Heredity
- Inherited traits
- Rules for the Inheritance of traits – Mendel’s contribution
- How do these traits get expressed?
- Evolution
- Acquired and inherited traits
- Speciation
- Evolution and classification
- Evolution by stages
- Evolution should not be equated with ‘progress’
- Human Evolution.

PRACTICAL

Total - 20 marks

Every student will perform at least fifteen experiments (at least five experiments from each unit) during the academic year.

PHYSICS

1. To verify the laws of reflection of light using plane mirror.
2. To determine the focal length of a concave mirror by obtaining image of a distant object.
3. To trace the path of a ray of light passing through a rectangular glass slab for different angle of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.
4. To determine the focal length of a convex lens by obtaining the image of a distant object.
5. To trace the path of a ray of light passing through a glass prism and measure the angle of deviation.
6. To study the dependence of potential difference (v) across a resistor, determine its resistance.
7. (a) To determine the equivalent resistance of two resistors when connected in series
parallel.
(b) To determine the equivalent resistance of two resistors when connected in parallel.

BIOLOGY

1. To study land food chain from the given chart.
2. Construction of food web using models.
3. To study the different parts of a Hibiscus flower.
4. To study germination of grams/pea seeds.
5. To test the presence of starch in a given food sample.
6. To study various things around and classify them into living and non-living.
7. To identify bio-degradable and non-biodegradable materials (wastes) in the environment.
8. Collection of newspaper reports on HIV/AIDS.

CHEMISTRY

1. To measure the change in temperature during chemical reaction (at least four) and conclude whether the reaction is exothermic or not.

2. To identify bleaching powder from the given samples of chemicals (four samples).
3. To identify baking soda from samples of chemicals (four samples).
4. (a) To study on precipitation reaction and isolation of the precipitate, Na_2SO_4 with BaCl_2
(b) To study on precipitation reaction and isolation of precipitate, NaCl with AgNO_3 .
5. To prepare Sulphur dioxide gas and study its two physical and two chemical properties.
6. Carry out the reactions for an acid (HCl) with:
 - (i) Litmus solution (blue/red),
 - (ii) Zinc metal,
 - (iii) Solid Sodium carbonate
 - (iv) Sodium hydroxide.
7. To prepare ammonia gas and study its two physical and two chemical properties.
8. To study properties of acetic acid (ethanoic acid).
 - (i) odour
 - (ii) solubility in water
 - (iii) effect on litmus
 - (iv) reaction with sodium bicarbonate
9. To identify whether a given solution is acidic or basic, performing following test is required:
 - (i) Litmus test,
 - (ii) Reaction with NaHCO_3 or Na_2CO_3
 - (iii) Reaction with NH_4OH or $(\text{NH}_4)_2\text{CO}_3$
10. To study the decomposition of CaCO_3 and prove that CO_2 is evolved during the reaction (lime water test)
11. To perform the reaction of 1: 1 molar acetic acid and ethanol (ethyl alcohol) in the presence of sulphuric acid.
12. To examine the heating effect on sugar and common salt, observe the change and find the nature of bonding in the two compounds.
13. To determine the pH value of equimolar concentration of four acids and arrange them in order of their increasing acidity.

PRESCRIBED TEXTBOOKS:

1. **Core Science - X**
- M/S Goyal Brothers Prakashan, D-231-232, Sector-63, Noida - 201301 (UP).
2. **Practical Science - X**
- M/S Laxmi Publications Pvt. Ltd., Hemsan Complex, M. D. Shah Road, Paltan Bazar, Guwahati - 781008.
