

CLASS – X

1. Natural Phenomena

Convergence and divergence of light. Images formed by a concave mirror; related concepts; centre of curvature; principal axis. Optic centre, focus, focal length. Refraction; laws of refraction.

Image formed by a convex lens; functioning of a lens in human eye; problems of vision and remedies. Applications of spherical mirrors and lenses.

Appreciations of concept of refraction; velocity of light; refractive index; twinkling of stars; dispersion of light. Scattering of light.

2. How things work.

Effects of Current

Potential, Potential difference, Ohm's law; Series combination of resistors, parallel combination of resistors; Power: dissipation due to current; Interrelation between P, V, I and R.

Magnets: Magnetic field, field lines, field due to a current carrying wire, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's left hand rule. Electromagnetic induction. Induced potential difference, Induced current. Direct current. Alternating current; frequency of AC. Advantage of AC over DC. Domestic electric circuits.

3. Materials

Chemical Substances - Nature and Behaviour

Acids, bases and salts: General properties, examples and uses.

Chemical reactions: Types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction in terms of gain and loss of oxygen and hydrogen.

Metals and non-metals: Brief discussion of basic metallurgical processes. Properties of common metals. Elementary idea about bonding.

Carbon Compounds: Carbon compounds, elementary idea about bonding.

Saturated hydrocarbons, alcohols, carboxylic acids (no preparation, only properties).

Some Important chemical compounds: Soap-cleansing action of soap.

Periodic classification of elements: Gradations in properties: Mendeleev periodic table.

4. The world of the living

Our environment

Our environment: Environmental problems, their solutions. Biodegradable, non- biodegradable, **Ozone depletion** **Life Processes:** "living" things; Basic concept of nutrition, respiration, transport and excretion in plants and animals.

Control and Co-ordination in plants and animals: Tropic movements in plants; Introduction to plant hormones; control and co-ordination in animals: voluntary, involuntary and reflex action, nervous system; chemical co-ordination : animal hormones.

Reproduction : Reproduction in plants and animals. Need for and methods of family planning. Safe sex vs HIV, AIDS. Child bearing and women's health.

Heridity and evolution: Heridity; Origin of life: brief introduction; Basic concepts of evolution.

5. Natural Resources

Conservation of natural resources: Management of natural resources. Conservation and judicious use of natural resources. Forest and wild life, coal and petroleum conservation. People's participation. Chipko movement. Legal perspectives in conservation and international scenario.

The Regional environment: Big dams: advantages and limitations; alternatives if any. Water harvesting. Sustainability of natural resources.

Sources of energy: Different forms of energy, leading to different sources for human use: fossil fuels, solar energy; biogas; wind, water and tidal energy; nuclear energy. Renewable versus non - renewable sources.

PRACTICALS LIST OF EXPERIMENTS

- To find the pH of the following samples by using pH paper/universal indicator.
 - Dilute Hydrochloric acid
 - Dilute NaOH solution
 - Dilute Ethanoic acid solution
 - Lemon juice
 - Water
 - Dilute Sodium Bicarbonate Solution.
- To study the properties of acids and bases HCl & NaOH by their reaction with
 - Litmus solution (Blue/Red)
 - Zinc metal
 - Solid Sodium Carbonate
- To determine the focal length of
 - Concave mirror
 - Convex lensby obtaining the image of a distant object.
- To trace the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.
- To study the dependence of current (I) on the potential difference (V) across a resistor and determine its resistance. Also plot a graph between V and I.
- To determine the equivalent resistance of two resistors when connected in series.
- To determine the equivalent resistance of two resistors when connected in parallel.
- To prepare a temporary mount of a leaf peel to show stomata.
- To show experimentally that light is necessary for photosynthesis.
- To show experimentally that carbon dioxide is given out during respiration.
- To study (a) binary fission in Amoeba and (b) budding in yeast with the help of prepared slides.
- To determine the percentage of water absorbed by raisins.

13. To prepare SO_2 gas, observe its following properties and draw inferences in respect of
- odour
 - solubility in water
 - effect on litmus paper
 - action on acidified potassium dichromate solution.
14. a) To observe the action of Zn, Fe, Cu and Al metals on the following salt solutions,
- $\text{ZnSO}_4(\text{aq.})$
 - $\text{FeSO}_4(\text{aq.})$
 - $\text{CuSO}_4(\text{aq.})$
 - $\text{Al}_2(\text{SO}_4)_3(\text{aq.})$
- b) Arrange Zn, Fe, Cu and Al metals in the decreasing order of reactivity based on the above result.
15. To study the following properties of acetic acid (ethanoic acid):
- odour
 - solubility in water
 - effect on litmus
 - reaction with sodium bicarbonate