

# COURSE STRUCTURE

## CLASS X

First Term	Marks : 90
<b>Units</b>	<b>Marks</b>
I. Chemical Substances	33
II. World of Living	21
III. Effects of Current	29
IV. Natural Resources	07
<b>Total</b>	<b>90</b>

### Theme : Materials

(30 Periods)

#### Unit : Chemical Substances - Nature and Behaviour

**Chemical reactions :** Chemical equation, Balanced chemical equation, implications of a balanced chemical equation, types of chemical reactions : combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction.

**Acids, bases and salts :** Their definitions in terms of furnishing of H<sup>+</sup> and OH<sup>-</sup> ions, General properties, examples and uses, 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.

**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.

### Theme : The World of The Living

(20 Periods)

#### Unit : World of Living

**Life processes :** "living being". Basic concept of nutrition, respiration, transport and excretion in plants and animals.

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

### Theme : How things work.

(32 Periods)

#### Unit : 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, Inter relation between P, V, I and R.

**Magnetic effects of current :** Magnetic field, field lines, field due to a current carrying conductor, 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. Fleming's Right Hand Rule, Direct current. Alternating current : frequency of AC. Advantage of AC over DC. Domestic electric circuits.

**Theme : Natural Resources**

**(08 periods)**

**Sources of energy :** Different forms of energy, conventional and non-conventional sources of energy: fossil fuels, solar energy; biogas; wind, water and tidal energy; nuclear energy. Renewable versus non-renewable sources.

## PRACTICALS

Practical should be conducted alongside the concepts taught in theory classes.

### FIRST TERM

1. To find the pH of the following samples by using pH paper/universal indicator.
  - a. Dilute Hydrochloric acid
  - b. Dilute NaOH solution
  - c. Dilute ethanoic acid solution
  - d. Lemon juice
  - e. Water
  - f. Dilute sodium bicarbonate solution.
2. To study the properties of acids and bases HCl & NaOH by their reaction with
  - a. Litmus solution (Blue/Red)
  - b. Zinc metal
  - c. Solid sodium carbonate
3. To perform and observe the following reactions and classify them into:
  - i. Combination reaction
  - ii. Decomposition reaction
  - iii. Displacement reaction
  - iv. Double displacement reaction
    - 1) Action of water on quick lime.
    - 2) Action of heat on ferrous sulphate crystals.
    - 3) Iron nails kept in copper sulphate solution.
    - 4) Reaction between sodium sulphate and barium chloride solutions.

4. a) To observe the action of Zn, Fe, Cu and Al metals on the following salt solutions.
- ZnSO<sub>4</sub> (aq)
  - FeSO<sub>4</sub> (aq)
  - CuSO<sub>4</sub>(aq)
  - Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>(aq)
- b) Arrange Zn, Fe, Cu and Al metals in the decreasing order of reactivity based on the above result.
5. To study the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plot a graph between V and I.
6. To determine the equivalent resistance of two resistors when connected in series.
7. To determine the equivalent resistance of two resistors when connected in parallel.
8. To prepare a temporary mount of a leaf peel to show stomata.
9. To show experimentally that light is necessary for photosynthesis.
10. To show experimentally that carbon dioxide is given out during respiration.

## SECOND TERM

### CLASS X

Second Term	Marks : 90
Units	Marks
I. Chemical Substances -Nature and Behaviour	23
II. World of Living	30
III. Natural Phenomena	29
IV. Natural Resources	08
<b>Total</b>	<b>90</b>

**Theme : Materials**

**(25 Periods)**

**Unit : Chemical Substances - Nature and Behaviour**

**Carbon compounds :** Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

**Periodic classification of elements :** Need for classification, Modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

## **Theme : The World of The Living**

**(30 Periods)**

### **Unit : World of Living**

**Reproduction** : Reproduction in animal and plants (asexual and sexual) reproductive health-need for and methods of family planning. safe sex vs HIV/AIDS. Child bearing and women's health.

**Heridity and evolution** : Heredity; Mendel's contribution- Laws for inheritance of traits: Sex determination: brief introduction; Basic concepts of evolution.

## **Theme : Natural Phenomena**

**(23 Periods)**

**Unit** : Reflection of light at curved surfaces, Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification.

Refraction; laws of refraction, refractive index.

Refraction of light by spherical lens, Image formed by spherical lenses, Lens formula (Derivation not required), Magnification. Power of a lens; 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.

## **Theme : Natural Resources**

**(12 Periods)**

**Unit** : Conservation of natural resources

Management of natural resources. Conservation and judicious use of natural resources. Forest and wild life, coal and petroleum conservation. Examples of People's participation for conservation of natural resources.

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

**Our environment** : Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable, substances.

## **PRACTICALS**

**Practical should be conducted alongside the concepts taught in theory classes.**

### **SECOND TERM**

1. To study the following properties of acetic acid (ethanoic acid) :
  - i) odour
  - ii) solubility in water
  - iii) effect on litmus
  - iv) reaction with sodium bicarbonate

2. To study saponification reaction for preparation of soap.
3. To study the comparative cleaning capacity of a sample of soap in soft and hard water.
4. To determine the focal length of
  - i. Concave mirror
  - ii. Convex lensby obtaining the image of a distant object.
5. 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.
6. To study (a) binary fission in Amoeba and (b) budding in yeast with the help of prepared slides.
7. To trace the path of the rays of light through a glass prism.
8. To find the image distance for varying object distances in case of a convex lens and draw corresponding ray diagrams to show the nature of image formed.
9. To study homology and analogy with the help of preserved / available specimens of either animals or plants.
10. To identify the different parts of an embryo of a dicot seed ( Pea, gram or red kidney bean).

### **RECOMMENDED BOOKS :**

Science - Textbook for class IX - NCERT Publication

Science - Textbook for class X - NCERT Publication

Assessment of Practical Skills in Science - Class IX - CBSE Publication

Assessment of Practical Skills in Science - Class X - CBSE Publication

Laboratory Manual Science - Class IX , NCERT Publication

Laboratory Manual Science - Class X, NCERT Publication