Class 10 Science Updated Syllabus

Theme: Materials
Unit I: Chemical Substances-Nature and Behaviour
Chemical reactions: Chemical equation, Balanced chemical equation, implication 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+ and OH- 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.
Carbon compounds : Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series.
Periodic classification of elements: Need for classification, early attempts at classification of elements (Dobereiner's Triads, Newland's Law of Octaves, Mendeleev's Periodic Table), Modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

Theme: The World of the Living
Unit II: World of Living (50 Periods)

Life processes: 'Living Being'. Basic concept of nutrition, respiration, transport and excretion in plants and animals.
Reproduction: Reproduction in animals and plants (asexual and sexual) reproductive health-need and methods of family planning. Safe sex vs HIV / AIDS. Child bearing and women's health.
Heredity and Evolution: Heredity; Mendel's contribution - Laws for inheritance of traits: Sex determination: brief introduction.

Theme: Natural Phenomena
Unit III: Natural Phenomena

Reflection of light by 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.

Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

Theme: How Things Work
Unit IV: 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.

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, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule.

Theme: Natural Resources
Unit V: Natural Resources

Our environment: Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable substances. ONLY FOR INTERNAL ASSESSMENT Note: Learners are assigned to read the below listed part of Unit V. They can be encouraged to prepare a brief write up on any one concept of this Unit in their Portfolio. This may be an assessment for Internal Assessment and credit may be given (Periodic assessment/Portfolio). This portion of the Unit is not to be assessed in the year-end examination.
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. Big dams: advantages and limitations; alternatives, if any. Water harvesting. Sustainability of natural resources.

PRACTICALS

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

List of Experiments:
1. Studying the properties of acids and bases (HCl & NaOH) by their reaction with: (Unit - I)
(a) Litmus solution (Blue/Red)

(b) Zinc metal

(c) Solid sodium carbonate

2. Performing and observing the following reactions and classifying them into: (Unit - I)
A. Combination reaction

B. Decomposition reaction

C. Displacement reaction

D. Double displacement reaction

(i) Action of water on quick lime

(ii) Action of heat on ferrous sulphate crystals

(iii) Iron nails kept in copper sulphate solution

(iv) Reaction between sodium sulphate and barium chloride solutions

3. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions: (Unit - I)
(i) $ZnSO_4$ (aq)
(ii) $FeSO_4$ (aq)
(iii) $CuSO_4$ (aq)
(iv) $Al_2(SO_4)_3$ (aq)
Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.

4. Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plotting a graph between V and I. (Unit - IV)
5. Experimentally show that carbon dioxide is given out during respiration. (Unit - II)
6. Determination of the focal length of: (Unit - III)
(i) Concave mirror

(ii) Convex lens

by obtaining the image of a distant object.

7. Tracing 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. (Unit - III)
8. Studying (a) binary fission in Amoeba, and (b) budding in yeast and Hydra with the help of prepared slides. (Unit - II)
9. Tracing the path of the rays of light through a glass prism. (Unit - III)