SACIENCE

(Code No.322)

BRIEF

The subject of Science plays an important role in developing in children well defined abilities in cognitive, affective and psychomotor domains. It augments the spirit of enquiry, creativity, objectivity and asthetic sensibility. Whereas the upper primary stage demands that plentiful opportunities should be provided to the students to engage them with the processes of science like observing, recording observations, drawing, tabulation, plotting graphs etc. the secondary stage expects abstraction and quantitative reasoning to occupy a more central place in the teaching and learning of Science. Thus, the idea of atoms and molecules being the building blocks of matter makes its appearance, as does Newton's law of Gravitation.

The present syllabus has been designed around six broad themes viz. Food, Materials, the world of the living, how things work, moving things, people and ideas, natural phenomenon and natural reasources. Special care has been taken to avoid temptation of adding too many concepts than can be comfortably learnt in the given time frame. No attempt has been made to be comprehensive.

At this stage, while science is still a common subject, the disciplines of Physics, Chemistry and Biology begin to emerge. The students should be exposed to experiences as well as modes of reasoning that are typical of the subject.

CLASS X

(Theory)

One Paper		**Marks: 60**
Unit		Marks
I.	Chemical Substances	18
II.	World of living	16
III.	Effects of Current	10
IV.	Light	8
V.	Natural Resources	8
		Total 60

Theme: Materials

Unit 1 : Chemical Substances - Nature and Behaviour Acids, bases and salts: General properties, examples and uses, concept of pH scale, importance of pH in everyday life; preparation and uses of sodium hydroxide, Bleaching powder, Baking soda, washing soda and Plaster of Paris.

Chemical reactions : Chemical Equation, 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: General properties of Metals and Non-metals,

reactivity series, Formation and properties of ionic compounds, Basic Metallurgical processes, corrosion and its prevention.

Carbon Compounds : Covalent bonding in carbon compounds. Versatile nature of carbon, Nomenclature of carbon compounds, Functional groups, difference between saturated hydrocarbons and unsaturated hydrocarbons, Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

Periodic classification of elements : Modern Periodic table, Gradation in Properties.

Theme : The world of the living

Unit2 : World of Living

Life Processes : "living" things; 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: voluntary, involuntary and reflex action, nervous system; chemical co-ordination Animal hormones.

Reproduction:

Reproduction in animal and plants (asexual and sexual). 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.

Theme : How things work.

Unit 3 : Effects of Current

Potential difference and electric current. Ohm's law; Resistance, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors; Heating effect of Electric current; Electric Power, Inter relation 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. Electro magnetic 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 Phenomena

Unit 4 : 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, problems of vision and remedies, 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

Unit 5 : 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.

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. Renewable versus nonrenewable sources.

Our Environment : Eco-system, Environmental problems, their solutions. Biodegradable and non biodegradable, substances ozone depletion.

PRACTICAL

L1ST OF EXPERIMENTS

Marks : 40 (20+20)

1. To find the pH of the following samples by using pH paper/universal indicator.

i) Dilute Hydrochloric acid

ii) Dilute NaOH solution

iii) Dilute Ethanoic acid solution

iv) Lemon juice

v) Water

vi) Dilute Sodium Bicarbonate Solution.

2. To study the properties of acids and bases Hel & NaOH by their reaction with

i) Litmus solution (Blue/Red)

ii) Zinc metal

iii) Solid Sodium Carbonate

3. To determine the focal length of

a) Concave mirror

b) Convex lens by obtaining the image of a distant object.

4. 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.

5. 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 l.

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.

11. To study (a) binary fission in Amoeba and (b) budding in yeast with the help of prepared slides.

12. To determine the percentage of water absorbed by raisins.

13. 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.

14. a) To observe the action of Zn, Fe, Cu and AI metals on the following salt solutions.

        i) ZnS04 (aq.)

        ii) FeS04 (aq.)

        iii) CuS04 (aq.)

        iv) Al2 (504)3 (aq.)

    b) Arrange Zn, Fe, Cu and AI metals in the decreasing order of reactivity based on the above result.

15. 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

SCHEME OF EVALUATION :

School-based hands-on practical examination. 20 Marks

RECOMMENDED BOOKS :

Science-Text book for class IX - **NCERT Publication**

Science-Text book for class X - **NCERT Publication**