

COURSE STRUCTURE
CLASS IX
(Annual Examination)

Marks: 80

Unit No.	Unit	Marks
I	Matter-Its Nature and Behaviour	27
II	Organization in the Living World	26
III	Motion, Force and Work	27
	Total	80
	Internal Assessment	20
	Grand Total	100

Theme: Materials

Unit I: Matter- It's Nature and Behaviour

Nature of matter: Elements, compounds and mixtures. Heterogeneous and homogenous mixtures, colloids and suspensions.

Particle nature and their basic units: Atoms and molecules, Law of constant proportions, Atomic and molecular masses. Mole concept: Relationship of mole to mass of the particles and numbers.

Structure of atoms: Electrons, protons and neutrons, valency, chemical formula of common compounds. Isotopes and Isobars.

Theme: The World of the Living

Unit II: Organization in the Living World

Cell - Basic Unit of life: Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number.

Tissues, Organs, Organ System, Organism:

Structure and functions of animal and plant tissues (only four types of tissues in animals; Meristematic and Permanent tissues in plants).

Health and Diseases: Health and its failure. Infectious and Non-infectious diseases, their causes and manifestation. Diseases caused by microbes (Virus, Bacteria and Protozoans) and their prevention; Principles of treatment and prevention. Pulse Polio programmes.

Theme: Moving Things, People and Ideas

Unit III: Motion, Force and Work

Motion: Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, derivation of equations of motion by graphical method; elementary idea of uniform circular motion.

Force and Newton's laws : Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum.

Gravitation: Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall.

Work, energy and power: Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy.

ONLY FOR INTERNAL ASSESSMENT

Note: Learners are assigned to read the below listed part of Unit IV. 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.

Theme: Natural Resources: Balance in nature

Unit IV: Our Environment

Physical resources: Air, Water, Soil. Air for respiration, for combustion, for moderating temperatures; movements of air and its role in bringing rains across India.

Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages.

Bio-geo chemical cycles in nature: Water, Oxygen, Carbon and Nitrogen.

PRACTICALS

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

(LIST OF EXPERIMENTS)

1. Preparation of: **Unit-I**
 - a) a true solution of common salt, sugar and alum
 - b) a suspension of soil, chalk powder and fine sand in water
 - c) a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of
 - transparency
 - filtration criterion
 - stability

2. Preparation of **Unit-I**
 - a) A mixture
 - b) A compoundusing iron filings and sulphur powder and distinguishing between these on the basis of:
 - (i) appearance, i.e., homogeneity and heterogeneity
 - (ii) behaviour towards a magnet
 - (iii) behaviour towards carbon disulphide as a solvent
 - (iv) effect of heat

3. Perform the following reactions and classify them as physical or chemical changes: **Unit-I**
 - a) Iron with copper sulphate solution in water
 - b) Burning of magnesium ribbon in air
 - c) Zinc with dilute sulphuric acid
 - d) Heating of copper sulphate crystals
 - e) Sodium sulphate with barium chloride in the form of their solutions in water

4. Preparation of stained temporary mounts of (a) onion peel, (b) human cheek cells & to record observations and draw their labeled diagrams. **Unit-II**

5. Identification of Parenchyma, Collenchyma and Sclerenchyma tissues in plants, striped, smooth and cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labeled diagrams. **Unit-II**

6. Determination of the density of solid (denser than water) by using a spring balance and a measuring cylinder. **Unit-III**

7. Establishing the relation between the loss in weight of a solid when fully immersed in
 - a) Tap water **Unit-III**
 - b) Strongly salty water with the weight of water displaced by it by taking at least two different solids.

8. Verification of the law of conservation of mass in a chemical reaction.

Unit-III