

# Mizoram Board Class - 'GWYbW' Syllabus

**Motion:** Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform and uniformly accelerated motion, 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, inertia of a body, inertia and mass, momentum, force and acceleration, elementary idea of conservation of momentum, action and reaction forces

**Gravitation and Floatation:** Gravitation; universal law of gravitation, force of gravitation of the earth (gravity), acceleration due to gravity; mass and weight; free fall, thrust and pressure, Archimedes' principle, buoyancy, elementary idea of relative density  
Work, Energy and Power Work done by a force, energy, power; kinetic and potential energy; law of conservation of energy

**Sound:** Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultrasound; reflection of sound; echo and SONAR, structure of the human ear (auditory aspect only).

**Matter in Our Surroundings:** Definition of matter; Particle nature, solid, liquid and gas; characteristics -shape, volume, density; change of state-melting (absorption of heat), freezing, evaporation (Cooling by evaporation), condensation, sublimation.

**Is Matter Around Us Pure:** Elements, compounds and mixtures. Heterogeneous and homogeneous mixtures, colloids and suspensions.

**Atoms and Molecules:** atoms and molecules. Law of constant proportions. Atomic and molecular masses. Mole Concept, Relationship of mole to mass of the particles and numbers. Valency. Chemical formula of common compounds.

**Structure of the Atom:** Electrons, protons and neutrons; Isotopes and isobars.  
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; chloroplast, mitochondria, vacuoles, ER, golgi apparatus; nucleus, chromosomes - basic structure, number.

**Tissues:** Structure and functions of animal and plant tissues (four types in animals; meristematic and permanent tissues in plants).

**Diversity in Living Organisms:** Diversity of plants and animals - basic issues in scientific naming, basis of classification. Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thallophyta, Bryophyta, Pteridophyta, gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

**Why Do We Fall I 11:** 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 programme.

Natural 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, nitrogen.

**Improvement in Food Resources:** Plant and animal breeding and selection for quality improvement and management; use of fertilizers, manures; protection from pests and diseases; organic farming.

## PRACTICALS LIST OF EXPERIMENTS

### 1. To prepare

- 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 of starch in water and egg albumin in water and distinguish between these on the basis of
  - i) transparency
  - ii) filtration criterion
  - iii) stability

### 2. To prepare

- a) a mixture
  - b) a compound
- using iron filings and sulphur powder and distinguish between these on the basis of:
- i) appearance i.e., homogeneity and heterogeneity
  - ii) behaviour towards a magnet
  - iii) behaviour towards carbon disulphide a solvent.
  - iv) effect of heat.

### 3. To study the extent of cooling caused by evaporation on the following liquids, using a thermometer. Also to arrange these liquids in the increasing order of the extent of cooling produced

- i) Water
- ii) Alcohol
- iii) Ether

4. To verify laws of reflection of sound.

5. To determine the density of solid (denser than water) by using a spring balance and a measuring cylinder.

6. To establish the relation between the loss in weight of a solid when fully immersed in
  - i) tap water
  - ii) strongly salty water, with the weight of water displaced by it by taking at least two different solids.
7. To measure the temperature of hot water as it cools and plot a temperature-time graph.
8. To determine the velocity of a pulse propagated through a stretched string/slinky.
9. To prepare stained temporary mounts of (a) onion peel and (b) human cheek cells and to record observations and draw their labeled diagrams.
10. To identify parenchyma and sclerenchyma tissues in plants, striped muscle fibers and nerve cells in animals, from prepared slides and to draw their labeled diagrams.
11. To separate the components of a mixture of sand, common salt and ammonium chloride (or camphor) by sublimation.
12. To determine the melting point of ice and the boiling point of water.
13. To observe the onion peel cells placed in hypertonic solution under the microscope and draw labelled diagram of the same.
14. To study the characteristic of Spirogyra/Agaricus, Moss/Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of groups they belong to.
15. To observe and draw the given specimens-earthworm, cockroach, bony fish and bird. For each specimen record
  - (a) one specific feature of its phylum
  - (b) one adaptive feature with reference to its habitat.