Subject : Science Class – 9

Chapter	Omitted Topics
Gravitation and Floatation	Thrust and pressure, Archimedes' principle, buoyancy, elementary idea of relative density. (Page No 59 – 65)
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). (Page No 95 – 115)
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. (Page No 116 – 134)
Is Matter around us pure	(Page No 151 – 160)
Diversity in Living Organisms	Diversity of plants and animals - basic issues in scientific naming, basis of classification. (Page No 258 – 285)
Tissues	Structure and functions of animal and plant tissues (four types in animals; meri-stematic and permanent tissues in plants). (Page No 237 – 257)
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. ((Page No 307 – 333)
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. (Page No 334 – 360)

EXPERIMENTS

4. To verify laws of reflection of sound.
8. To determine the velocity of a pulse propagated through a stretched string/slinky.
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.
14. To study the characteristic of spirogyra/Agaricus, Moss/Fern, Pinus (either with male or female conre) 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.

SCIENCE (Selected)
Class - 9

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. Work, Energy and Power Work done by a force, energy, power; kinetic and potential energy; law of conservation of energy

Is Matter Around Us Pure
Elements, compounds and mixtures. Heterogenous and homogenous 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, mul-ticellular organisms; cell membrane and cell wall, cell organelles; chloroplast, mitochondria, vacuoles, ER, golgi apparatus; nucleus, chromosomes - basic structure, number.

Diversity in Living Organisms
Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thalophyta, Bryophyta, Pteridophyta, gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

Why Do We Fall Ill
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.

Weightage to Content Area :

Unit	Topic	Marks
1	Motion	10
2	Force and Laws of Motion	
3	Gravitation & Floatation	07
4	Work and Energy	07
5	Is matter around us pure?	08
6	Atoms and Molecules	08
7	Structure of the Atom	07
8	The fundamental unit of life	07
10	Diversity in living Organisms	08
11	Why do we fall ill	08
Total		70

Weightage to Form of Questions :

Sl/no.	***Form of Questions***	***No. of Questions***	***Marks for each question***	***Total Marks***
2.1	Objective Type	14	1	14
2.2	Very Short Answer	07	1	07
2.2	Short Answer I	08	2	16
2.3	Short Answer II	07	3	21
2.4	Long Answer	03	4	12
TOTAL		**39**		**70**

Scheme of Option :

There shall not be any overall choice in the question paper. However, internal choice on a very selective basis shall be given based on same objective. It shall also have same mark allotment and same difficulty level.

Scheme of Section :

There shall be three sections namely Section A (Physics), Section B (Chemistry) and Section C (Biology).

Sample Blue Print 1 : Science - 9

Forms of Question/ Topic	Knowledge					Understanding					Application					HOTS					Evaluation					Total
	Obj	VSA	SA I	SA II	LA	Obj	VSA	SA I	SA II	LA	Obj	VSA	SA I	SA II	LA	Obj	VSA	SA I	SA II	LA	Obj	VSA	SA I	SA II	LA	
Motion Force and Laws of Motion								2(1)		4(1)								2(1)			1(1)	1(1)				10(5)
Gravitation & floatation	1(1)			3(1)		1(1)					1(1)						1(1)									7(5)
Work and Energy	1(1)	1(1)											2(1)	3(1)												7(4)
Is matter around us pure?	1(1)				4(1)	1(1)							2(1)													8(4)
Atoms and Molecules	1(1)								3(1)		1(1)					1(1)							2(1)			8(5)
Structure of the Atom		1(1)												3(1)							1(1)		2(1)			7(4)
The fundamental unit of life	1(1)			3(1)													1(1)	2(1)								7(4)
Diversity in living Organisms							1(1)	2(1)		4(1)	1(1)															8(4)
Why do we fall ill	1(1)			3(1)					3(1)			1(1)														8(4)
Sub - total	**6(6)**	**2(2)**		**9(3)**	**4(1)**	**2(2)**	**1(1)**	**4(2)**	**6(2)**	**8(2)**	**3(3)**	**1(1)**	**4(2)**	**6(2)**			**1(1)**	**2(2)**	**4(2)**		**2(2)**	**1(1)**	**4(2)**			**70(39)**
Total	**21(13)**					**21(9)**					**14(8)**					**7(5)**					**7(5)**					

Note : 1) The figures in the bracket denotes the number of questions

2) This is only a sample Blue Print. The question setter may develop his/her own Blue Print as per the question design

PRACTICALS (Selected)
Class - 9

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

5. 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.

6. To measure the temperature of hot water as it cools and plot a temperature-time graph.

7. To prepare stained temporary mounts of (a) onion peel and (b) human cheek cells and to record observations and draw their labelled diagrams.

8. To identify parenchyma and sclerenchyma tissues in plants, striped muscle fibers and nerve cells in animals, from prepared slides and to draw their labelled diagrams.

9. To observe the onion peel cells placed in hypertonic solution under the microscope and draw labelled diagram of the same.