

Class-10
Subject- science

Note: In this written exam of 70 marks will be only question paper and there will be 30 marks of practical and project work.

Sr.no.	Unit	Marks
1	Chemical Substances-Nature and Behaviour	20
2	World of living	20
3	Natural Phenomena	12
4	Effect of current	13
5	Natural Resources	05
	Total	70
	Practical and Project work	30
	Grand Total	100

As the regular teaching – learning in schools, during the session 2020-21 has widely been affected due to the COVID-19 pandemic, the subject experts committee, after the consideration, has recommended to reduce the syllabus by 30% in the following manner-

Unit I: Chemical Substances Nature and Behaviour :-

Metals and nonmetals: Properties of metals and non-metals, Formation and properties of ionic compounds

Periodic classification of elements: early attempts at classification of elements
Dobereiner's Triads, Newland's Law of Octaves

Unit II: World of Living-

Control and co-ordination in animals and plants: Tropic movements in plants; Introduction of plant hormones; Control and co-ordination in animals: Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones.

Unit III: Natural Phenomena-

Refraction - Magnification Power of a lens, scattering of light, applications in daily life.

Unit IV: Effects of Current - Applications in daily life.

Magnetic effects of current :

Advantage of AC over DC. Domestic electric circuits.

Unit V: Natural Resources- Biogas;

Our environment: Eco-system, Ozone depletion,

In Accordance to the Above, the remaining 70% of the total syllabus is as follows-

Unit I: Chemical Substances Nature and Behaviour :-

20 Marks

Chemical reactions: Chemical equation, Balanced chemical equation, implications of a balanced chemical equation, type 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 nonmetals: Reactivity series, Basic metallurgical processes; Corrosion and its prevention.

Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydrocarbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

Periodic classification of elements: Need for classification, Mendeleev's Periodic Table), Modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

Unit II: World of Living-

20 Marks

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), Basic concepts of evolution.

Unit III: Natural Phenomena-

12 Marks

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),

Refraction- Laws of refraction, refractive index. Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required). Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses. Refraction of light through a prism, dispersion of light,

Unit IV: Effects of Current Electric current-

13 Marks

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. Heating effect of electric current 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, Electric Generator, Direct current. Alternating current: frequency of AC.

Unit V: Natural Resources -

05 Marks

Sources of energy: Different forms of energy, conventional and non-conventional sources of energy: Fossil fuels, solar energy; wind, water and tidal energy; Nuclear energy. Renewable versus non-renewable sources of Energy.

Our environment: Environmental problems, waste production and their solutions. Biodegradable and non-biodegradable substances.

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.

Dams: advantages and limitations. Water harvesting. Sustainability of natural resources.

PRACTICAL

Evaluation of Practical exam will be done at school level, and distribution of marks of practical exam will be as follows-

1- Three experiment	- $3 \times 3 = 9$ marks
2- Viva	= 3 marks
3- Sessional work	= 3 marks
<u>Total</u>	<u>= 15 marks</u>

LIST OF EXPERIMENTS:-

15 Marks

1. A. Finding 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 Hydrogen Carbonate solution
- B. Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with:
 - a) Litmus solution (Blue/Red)
 - b) Zinc metal
 - c) Solid sodium carbonate
2. Performing and observing the following reactions and classifying them into:
 - A. Combination reaction
 - B. Decomposition reaction
 - C. Displacement reaction
 - D. Double displacement reaction
 - (i) Action of water on quicklime
 - (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:
 - i) $\text{ZnSO}_4(\text{aq})$
 - ii) $\text{FeSO}_4(\text{aq})$
 - iii) $\text{CuSO}_4(\text{aq})$
 - iv) $\text{Al}_2(\text{SO}_4)_3(\text{aq})$
 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.
5. Determination of the equivalent resistance of two resistors when connected in series and parallel.
6. Preparing a temporary mount of a leaf peel to show stomata.
- 7 Experimentally show that carbon dioxide is given out during respiration.
- 8 Study of the following properties of acetic acid (ethanoic acid):
 - i)- odour
 - ii)- solubility in water

- iii)- effect on litmus
- iv)- reaction with Sodium Hydrogen Carbonate

9 Study of the comparative cleaning capacity of a sample of soap in soft and hard water.

10 Determination of the focal length of:

- i)- Concave mirror
- ii)- Convex lens by obtaining the image of a distant object.
By obtaining the image of a distant object.

11 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.

12 Studying (a) binary fission in Amoeba, and (b) budding in yeast and Hydra with the help of prepared slides.

13 Tracing the path of the rays of light through a glass prism.

14 Finding the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of image formed.

15 Identification of the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).

Note:- Every student should have a practical note book in which all practical records will be noted, should be checked properly and will be presented at the time of practical exam .

Project list

15 Marks

Note:- Prepare any three project from the given project list by the students. It will be compulsory to prepare one project and project file from each of the section (physics, chemistry, and biology). Teacher can also provide other projects at their levels. Evaluation of all three project will be done internally at school level –

- 1- To study pH value of following natural product and colour change in acid and base solution by using pH paper/ universal indicator.
 - (a) Lemon juice
 - (b) beat juice
 - (c) cabbage juice
 - (d) boiled pea water
 - (e) Rose's petals juice

- 2 - To make Chemical garden.
(glass Jar, Sand water glass solution, copper sulphate, cobalt sulphate or magnese sulphate crystal)
- 3- Comparative study by practical observation of produced heat in different neutralization reactions
- 4- To study modern periodic series by making it on chart paper
- 5- Madam Quiry personality and creations.
- 6- To prepare model of electric bell and to study its scientific principles .
- 7- To prepare kaleidoscope model.
- 8- To study in detail by listing the famous Indian scientist's personality and their contribution in science
- 9- To prepare model of electric quiz board giving necessary circuit.
- 10- Study of role of science in entertainment with help of pictures
- 11- Making a list by observing change in nature, position and size of image made by mirror and lens.
- 12- To study the different part (petals, sepals, androecium, gynoecium,) of bisexual flower such as Hibiscus and mustard and observation of pollination in them.
- 13- To prepare model of human heart.
- 14-To study germination and structure of seeds with the help of bean and maize seed (soaked)
- 15- Preparing herbarium by collecting different type of plants.
- 16- Growing plant without soil- preparing project report on the basis of practical and observation.
- 17- To study Air pollution produced by petrol and diesel and use of CNG to reduce this.
- 18- Importance of plastic and polythene in daily life and their role in environmental pollution.
- 19- Reason of increasing noise in your city and study with pictures of harmful effects.