Science Curriculum (2020-21)
COURSE STRUCTURE
CLASS IX

UNIT NO.	UNIT	MARKS
1	Matter its Nature and Behavior	27
2	Organization in Living World	26
3	Motion Force and Work	27
	Total	80
	Internal Assessment	20
	Grand Total	100

Chapter No/ (Month.)	Name of chapter	Practicals	Methodology	Assessment
Chapter-I Feb-March	**Unit : Organization in the Living World** Cell - Basic Unit of life : *Learning outcomes* # To illustrate Cell as a basic unit of life; # To categorize prokaryotic and eukaryotic cells, Unicellular and multicellular organisms; # To describe structure and functions of cell membrane and cell wall, # To explain cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, # To analyse endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number. Links for online study, https://youtu.be/IkJH2WRKTqs https://youtu.be/x-b4uLq4FZc	1.To prepare stained temporary mounts of (a) onion peel and (b) human cheek cells and to record observations and draw their labeled diagrams https://youtu.be/cmnhBJKfvNw	Discussion/ Explanation through examples/ Video demonstration / Notes making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.
Chem: Chapter-I Feb-March	**MATTER IN OUR SURROUNDINGS (March - May)** **Learning objective:** Students will be able to: ● Discuss the terminology related to the matter. ● Identify the substances around which are matter. ● Discuss about the physical nature of matter. ● Analyse the characteristics of particles of matter ● Categorise the three States of matter ● Tabulate the differences between the three States of matter ● Analyse the properties of solids liquids and gases ● Define the Graham law of diffusion. ● inter convert the Celsius scale into Kelvin scale and vice versa. ● The effect of change of temperature on states of matter ● Define the freezing point and boiling point ● propose an alternate definition of States of matter in terms of melting and boiling point ● define sublimation and operation	Preparation of: 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 https://youtu.be/w4BU_gg-r9Q Preparation of: a) A mixture b) A compound using 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 https://youtu.be/07kW9miNq2s	Discussion/ Explanation through examples/ Video demonstration / Notes making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.

	• Analysis of the effect of pressure on sublimation • Describing the factors affecting evaporation of liquids • Answer why evaporation causes cooling • Cite some examples of cooling caused by evaporation from daily life • Differentiate between boiling and evaporation **LINKS USED** **https://youtu.be/-9aGVrvPqzE** **https://youtu.be/QNLeoDFNXc** **https://youtu.be/1c1XzqtAJrk**	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 https://youtu.be/kifKFnx8vjM		
Phy: Chapter 1 Feb-June	Motion- After completion of this chapter students will be able to • Give difference between scalar and vector quantities. • Define terms such as speed velocity acceleration and its types. • Derivate three equations of motion using graphical method. • Solve questions related to three equation of motion. • Describe uniform Circular motion. • Evaluate uniform Circular motion and where it happens in daily life. • Links to be used • https://youtu.be/8qh--3X6E5w • https://youtu.be/vxFYfumAAlY • https://youtu.be/xViRvJxTu6k • https://youtu.be/VFfF3F-G9Uk		Discussion/ Explanation through examples/ Video demonstration/ Notes making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.
Chapter no. - II April-May	**:Tissues, Organs, Organ System, Organism (April - May)** ***Learning outcomes*** #To illustrate structure and functions of animal and plant tissues (only four types of tissues in animals; # To describe meristematic and permanent tissues in plants). https://youtu.be/TWTvQBO2qDc https://youtu.be/wAGJGCFtuvM *** **Note-Now This chapter is not in the syllabus;** it is the part of internal assessment only	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 https://youtu.be/7t5pn4bDlPQ	Discussion/ Explanation through examples/ Video demonstration / Notes making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.

Chem: Chapter no. - II April-May	**IS MATTER AROUND US PURE (May-July)** **Learning outcomes:** Student will be able to: ● define a pure substance and an impure substance in terms of Chemistry. ● ● Differentiate between a pure substance and an impure substance present around them ● ● Tabulate matter and its types and further complex branching of matter ● Define elements ● Observe different elements in their home ● Memorise total elements present and tell how many are naturally occurring and artificially synthesized ● Classify the elements based upon their physical and chemical properties ● Explain the properties of metals and their applications in daily life ● Explain the properties of nonmetals and their applications in daily life. ● Tabulate the differences between metals and nonmetals ● Define elements ● Observe different elements in their home ● Memorise total elements present and tell how many are naturally occurring and artificially synthesized ● Classify the elements based upon their physical and chemical properties ● Explain the properties of metals and their applications in daily life ● Explain the properties of nonmetals and their applications in daily life. ● Tabulate the differences between metals and nonmetals ● Define elements ● Observe different elements in their home ● Memorise total elements present and tell how many are naturally occurring and artificially synthesized ● Define a solution ● Answer why solutions are called true solutions ● Differentiate between aqueous and non aqueous solutions ● Terminology for components of solution ● Types of solutions prepare a table showing the type of solute and solvent in solid solutions, liquid solutions and gaseous solutions. ● Analyse the properties of solutions ● Calculate the concentrations of the	Verification of the law of conservation of mass in a chemical reaction. https://youtu.be/T87pXiq0w4Q .	Discussion/ Explanation through examples/ Video demonstration / Notes making Discussion/ Explanation through examples/ Video demonstration Discussion/ Explanation through examples/ Video demonstration / Assignment making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.

	solutions by applying appropriate formula. ● categorise saturated unsaturated and supersaturated solution ● Analyse the effect of temperature and pressure on solubility ● Describe the Properties of suspensions ● Define a colloidal solution ● Describe the dispersed phase and dispersion medium ● Categorise the types of colloidal systems **LINKS USED** **https://youtu.be/GrqE9Ao_4jk** **https://youtu.be/1c1XzqtAJrk** **https://youtu.be/EhLCUqL0EEE**			
Chapter no.III/ June-July	**Health and Diseases : (September)** * Learning Outcomes* # To illustrate health and its failure. # To categorize Infectious and Non-infectious diseases, their causes and manifestation. # To describe diseases caused by microbes (Virus, Bacteria and Protozoans) and their prevention; # To discuss principles of treatment and prevention. Pulse Polio programmes. https://youtu.be/AaXn8GiwU60 https://youtu.be/M264E0ZZsfU		Discussion/ Explanation through examples/ Video demonstration / Assignment making	

Chem: Chapter no.III/ June-July	**ATOMS AND MOLECULES (August-september)** **Learning outcomes:** Students will be able to: ● Differentiate between dispersed phase and dispersion medium ● Compare the characteristics of true solution , colloidal solution and suspension ● Analyse the applications of colloids in everyday life ● Define coagulation and can easily differentiate the positively charged sols from negatively charged sols ● Differentiate between dispersed phase and dispersion medium ● Compare the characteristics of true solution , colloidal solution and suspension ● Analyse the applications of colloids in everyday life ● Define coagulation and can easily differentiate the positively charged sols from negatively charged sols ● Explain the law of conservation of mass and law of constant composition ● Tell the experiment to verify the law of conservation of mass ● Illustrate with the examples the law of constant composition ● solve the numericals based upon the law of conservation of mass and law of constant composition ● Give the postulates of atomic theory by Dalton. ● explain the laws of chemical combination by deltas atomic theory ● Calculate the limitations or drawbacks of Dalton's atomic theory ● Tell their previous knowledge about an atom ● Write the symbols to represent atoms of different elements ● Answer the question how do atoms exist ● calculate and define the atomic mass and relative atomic mass ● Understand a molecule ● Differentiate between Molecules of an element and molecules of a compound ● Name the molecules of elements and molecules of compounds ● Predict the molecular mass of different ● Calculate the molecular masses ● Define ions and ionic compounds ● Write the chemical formula of compounds ● Define valency ● Deduce the chemical formula of simple molecular compounds		Discussion/ Explanation through examples/ Video demonstration / Notes making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.

	• Deduce the chemical formula of compounds containing only atomic ions • Have a clear vision about gram atomic mass and gram molecular mass • Introduction of moles concept. **LINKS USED** https://youtu.be/syi3pXJNe58 **https://youtu.be/uKCm_f0Xg_w** **https://youtu.be/1c1XzqtAJrk**			
Phy: Chapter 2 July-August	**Force and laws of motion.** After completion of this chapter students will be able to • Define force and it's effects • Name types of forces • Describe three laws of motion given by Newton. • Give examples of application of three laws of motion. • Solve numericals based on laws of motion. • Links to be used • https://youtu.be/8YhYqN9BwB4 • https://youtu.be/5oi5j11FkQg • https://youtu.be/TVAxASr0iUY		Discussion/ Explanation through examples/ Video demonstration/ Notes making Discussion/ Explanation through examples/ Video demonstration/ Assignment making	Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.
Chapter IV/ August-Septembe r	**Our environment;** **Biogeochemical cycles in nature:-** Water,Oxygen,Carbon, Nitrogen cycle.		Discussion/ Explanation through examples/ Video demonstration / Assignment making	***** Note Our environment is part of internal assessment**
Chem: Chapter IV/ August-Septembe r	**STRUCTURE OF ATOM (October-November)** **Learning outcomes:** Students will be able to: • Draw the discharge tube • Explain the discovery of electrons or study of cathode rays. • Analyse the properties of cathode rays • Define electrons • Write the charge and mass on electron • Describe the origin and production of anode rays • Analyse the properties of anode rays • Define of proton • Conclude that protons are constituents of all atoms			

	• Describe Thomson model of atom • Describe Rutherford model of atom • Categorise the drawbacks of rutherford's model of atom • Detailed explanation of Bohr's model atom • Compare the characteristics of electron proton and neutron • Relate the atomic number and mass number • Calculate the number of electrons protons and neutrons from atomic number and mass number • Visualise the distribution of electrons in different shells • Calculate the valence electrons and valency of an element • Calculate the number of electrons protons neutrons and valency of ions • Give examples of isotopes and define them • Give reasons for fractional atomic masses and calculation of average atomic masses • Describe the applications of isotopes • Define isobars • Describe some important characteristics of isobars **https://youtu.be/X2uvuSThtuI** https://youtu.be/fm2C0ovz-3M **https://youtu.be/1EdTw4I6L0U** https://youtu.be/LsW6Sle-SnA https://youtu.be/j4yc_cu7mqg https://youtu.be/mj9AxHiuZ-s			
Phy: Chapter no.3 September	GRAVITATION After completion of this chapter students will be able to • Define what universal law of gravitation is. • Give units and value of gravity. • Describe kepplers law of planetary motion. • Solve questions related to acceleration due to gravity. • Links of video to be used • https://youtu.be/Kw51KiZhm0I • https://youtu.be/c9shwPMpSq8 • https://youtu.be/lbOXZ2tcTgc • https://youtu.be/rFdbY_V7vIo	To determine the density of solid by using spring balance.and measuring cylinder. **https://youtu.be/CzcdByf9ZC0** **To establish the relation between loss in weight of a solid when fully immersed in tap water, strongly salty water, with weight of water displaced by it.**	Discussion/ Explanation through examples/ Video demonstration/ Assignment making	
Phy: Chapter 4 October	**Work and power.** **After completion of this chapter students will be**		Discussion/ Explanation through examples/	

	able to ● **Define what energy is and why it's important** ● **Give various variable forces.** ● **The work-energy theorem and how it's applied Kinetic vs. potential energy, gravitational potential energy, elastic potential energy** ● **List Conservative forces, mechanical energy.** ● **The definition of power, using math to calculate power.** ● **Links to be used** ● **https://youtu.be/w4QFJb9a8vo**		Video demonstration/ Notes making	