CHOITHRAM SCHOOL, MANIK BAGH, INDORE

ANNUAL CURRICULUM PLAN SESSION – 2020 - 21

CLASS: XI

SUBJECT:BIOLOGY-Term-I

Month & Working Days	Theme/ Sub-theme	Learning Objectives		Activities &Resources	Expected Learning Outcomes	Assessment
		Subject Specific (Content Based)	Behavioural (Application based)			
May-21	**Theme-Diversity in the Living World** **Sub themes-** **Living World** **-Characteristics of living organisms** **-History of classification** **-Nomenclature** **-Hierarchial classification** **Taxonomical Aids**	To make students understand and differentiate between Living and Non living organisms To classify different Living organism on the basis of hierarchy To familiarize with different Taxonomical Aids like Herbarium, botanical garden, Zoological museum and facilitate, identify and classify different organisms	To emphasizeon the development of observational and analytical skills and inculcating values like Responsibility, Coordination AwarenessandConcern Students will be empathetic towards the animals Students will learn about many medicinal plants and its use in day to day life	1.Group discussion on how these aids are helpful for biology students. 2.Importance of classifying organisms on the basis of hierarchy.	Analyse the importance of Zoological parks and museum in creating interest about wild life, providing education , furnishing recreation and conservation of endangered species They were able to evaluate the importance of botanical garden in educating public about country's plant wealth and stimulate people	Group discussion, Classification

					to grow more trees.	
May **June-17**	**Biological Classification-Monera** **Protista** **Fungi** **Plant Kingdom**	Understand and describe about two, three,four,five kingdom classification. Understand and explain systematics under four heads- identification, classification Nomenclature, Taxonomy Explain and comprehend the characteristic features of different kingdom (monera, protista, fungi) with examples, their physiology and their connectivity to different kingdom Classify and describe plant kingdom under different divisions – thalophyta, brophyta, pteridophyta, gymnosperm and angiosperm.	Students will be able to- Develop team work, cooperation, concern, empathy by studying diversity in living organisms. Inculcate the value of usefulness by studying the economic importance of microbes and different organisms. Develop sensitivity, concern and empathy towards nature by studying flora and fauna. Appreciate the change in higher organisms which was due to the gradual changes in the lower organisms. Develop curosity and eagerness to find the missing links between organisms of same kingdom and connecting links between organisms of different kingdom.	1.To study different parts of microscope and its working 2.To observe different slides of the kingdom monera and protista and comment on it 3.To observe different specimens and slides of kingdom Fungi and comment on it 4.To observe the different specimens of plant kingdom and comment on it 5.**Spotting-** To identify the given organism, classify, draw and write its significant characteristics	The learner have learnt and understood about the structure, habitat, physiology , life cycle and economic importance of different organisms of Kingdom-Monera, Protista, Fungi, Plant kingdom Learners have comprehended that basis of diversity is the adaptation evolved by organisms to survive in diverse environment in the face of competition for limited resources. Analyse and evaluate role of	Assignment

		The students will be able to comprehend and relate how cryptogams and phanerogams plants differ in their life cycle.			various microbes in the different products of our daily life. They were able to evaluate that blue green algae (ancient phosynthetic prokaryotes)added oxygen to the atmosphere which helped the evolution of aerobic eukaryotes	
July-26	**Animal Kingdom**	Students will be able to learn, understand the concept and classify Animal kingdom under different phylum porifera, cnidaria, ctenophore, platyhelminthes, aschelminthes, annelid, mollusca, arthropoda, echinodermata, chordata. They will explore their critical thinking by Connecting the lower forms of organisms to	To emphasize on development of observational, analytical skills and inculcating values like Responsibility, Coordination and Collaboration, Creativity, Awareness**,** Concerns Learners will understand about the economic importance of the organism Will be able to link food chain and web	1.To observe the different specimens of animal kingdom and comment on it 2.**Spotting-** To identify the given organism, classify, draw and write its significant characteristics	The learner have learnt and understood about the structure, habitat, physiology , life cycle and economic importance of different organisms of Kingdom Animalia Learners have comprehended that basis of	**Spotting** Assignment

		the higher forms which led to evolution.			diversity is the adaptation evolved by organisms to survive in diverse environment in the face of competition for limited resources	
July	**Digestion and Absorption** **Types of Nutrition** **Human Digestive System** **Nutritional disorders**	To make them understand about the Digestive system and various organs related to it. To comprehend the mechanism of Digestion of Food starting with ingestion, digestion, absorption, assimilation and egestion To analyze the different enzymatic action on various food component and make themaware about different disorders of Digestive system Indicate the importance	Students will develop scientific temperament and inquisitiveness. Infer the hypo or hyper secretion of hormones of pancreas causes diabetes mellitus Analyze the process of digestion of carbohydrate, protein and fats and understand the mechanism behind the absorption. Students will apply the knowledge of nutrient deficiency can cause different deficiency diseases like night blindness, kwashiorkor, beri-beri etc The learners can infer the cause of obesity due to excess of fatty food. Students will be able to identify	To test the presence of protein, starch and fats in the different food samples *https://amrita.olabs.edu.in/?sub=79&brch=17&sim=205&cnt=694*	The learners learnt about the process of digestion in different parts of the digestive system They were able to evaluate the importance of enzymes and gastric juices in the process of digestion. Understood the processes by which gastric parietal cells secrete hydrochloric acid into the stomach.	To test the presence of protein starch and fats in the different food Assignment

		of the hepatic portal system. Describe the tissue composition and the general function of each of the four layers of the alimentary canal. Describe the composition and functions of saliva, and explain how salivation is regulated. Explain the dental formula and differentiate clearly between deciduous and permanent teeth. Identify structural modifications of the wall of the stomach that enhance the digestive process Name the cell types responsible for secreting the various components of gastric juice and indicate the importance of eachcomponent in stomach activity.	type of food that should be taken at morning and evening They were able to recognize that problem of acidity or ulcer or any other disorder is due to improper function of different organs of digestive system They were able to analyze that duration for digestion of fats is more than protein and carbohydrates Compare the benefits and drawbacks of carbohydrates, lipids, and proteins in the diet. Discuss how to control diabetes type 2 and cardiovascular disease through diet and exercise. Define three types of eating disorders, and list the harmful consequences of each. Learners can Interpret the causes of diseases due to over or hypo secretion of hormones		Understand the neural and hormonal regulation of digestion. .Compare the general structure of teeth of herbivores, carnivores, and omnivores. Describe the digestive activities that occur in the mouth and indicate how food passes from the mouth to the stomach. Describe the digestive activities of and secretions produced by the stomach. Describe the digestive and absorptive activities of the	Assignment

		Identify and describe structural modifications of the wall of the small intestine that enhance the digestive process. Describe the histological anatomy of the liver. State the role of bile in digestion and describe how its entry into the small intestine is regulated State the role of pancreatic juice in digestion. List the enzymes involved in chemical digestion of the foodstuffs on which they act.			small intestine, including its secretions. Explain the importance of convolutions in the digestive tract; identify the regions that are highly convoluted and the regions that are not convoluted. Explain the digestive activities associated with the large intestine. Understand the symbiotic relationships that enhance digestive activities in the vertebrates. Know the two kinds of exocrine cells present in the pancreas and the function(s) of each of their	

					secretions. Describe the metabolic and digestive activities of the liver. Explain the importance of regulating food intake. Understand the importance of essential nutrients including vitamins and amino acids.	
August-20	**Breathing and Exchange of Gases** • **Types of respiration** • **Human respiratory System**	**Breathing and Exchange of Gases** Explain the different types of Respiration with examples. To familiarize with	Analyze the various functions of Respiratory organs in Human Beings Evaluate how the alveolies in lungs help in diffusion of gases .	To prove that we breathe out CO2 during respiration by an activity which shows lime water turns milky Demonstrate the process of Fermentation by preparing vinegar. Identify the Human Respiratory organs.	The learners will learn about the mechanism of respiration and different parts responsible for the respiratory	**Assignment**

	• **Disorders of Respiratory System**	different Respiratory organs To make them understand and differentiate between breathing and respiration. The learners will Understand about the respiratory organs of human beings and describe their functions. To apprehend them with the working of respiratory system To educate them with the Disorders of respiratory system	Identify the cause of respiratory disorders like bronchitis, emphysema, pneumonia, asthama etc. Relate how nicotine in tobacco triggers the respiratory diseases Describe respiratory differences of the child and the older adult Explain why carbon monoxide is poisonous for the living organisms when inhaled. Relate partial pressure (Daltons law) with diffusion of gasesand Henry's law with the type of gases which dissolves in blood. Analyse approximately how much oxygen and CO_2 is carried in the plasma and with hemoglobin		system Will be able to describe how oxygen is transported in the blood, and explain how oxygen loading and unloading is affected by temperature, pH, temp and pCO2 Able to understand and describe carbon dioxide transport in the blood. Analyse the mechanism of gas exchange between the alveoli and pulmonary capillaries. Identify where the main respiratory control center is located. Summerize how oxygen is	

					transported throughout the body Evaluate how increase in temperature and decrease in pH (increase in pCO2)affects oxygen unloading. Aware of different respiratory disorders.	
August	**Photosynthesis in Higher Plants** • History of Photosynthesis • Chloroplast and its pigments • Process and Mechanism of Photosynthesis • Factors Affecting Photosynthesis	**Photosynthesis in Higher Plants** To make them understand update with the Early Experiments To explain and make them understand the structure of chloroplast where Light reaction takes place Understand the importance of photosynthesis in plant growth	The learners will analyse the formation of assimilatory power which helped in the process of photosynthesis The learners evaluated the essentiality of light, water and CO_2 for the process of photosynthesis All food and fiber produced on earth is ultimately due to photosynthesis Increasing interest in plants as sinks for carbon	1.To observe the effect of light in plants for photosynthesis 2.To observe the stomata in the lower and upper epidermis of leaf and find the stomatal index 3.To detect the formation of starch in different leaves 4.To prove the presence of chlorophyll by paper chromatography *https://amrita.olabs.edu.in/?sub=79&brch=17&sim=124&cnt=445*	Explain the general reaction for photosynthesis in terms of water, light, oxygen and carbon dioxide and carbohydrate. Describe the structure of the chloroplast. Explain the difference between the light reactions and the	Assignment To observe the stomata in the lower and upper epidermis of leaf and find the stomatal index

		Explain the mechanism of Photosynthesis-light and dark reaction Tabulate the difference between C_3 and C_4 plants Analyse the process of Crassulacean Acid Metabolism in Succulent plants Comprehend the Source-sink relations • Source – Point where carbohydrates are produced (leaves) or released from storage (roots, stems) • Sink – point on the plant where carbohydrates are used for growth or stored List the factors that affect photosynthesis	All organic compounds needed for plant growth (proteins, lipids, starches, sugars) are derived from the products of photosynthesis Any abiotic or biotic factor that limits photosynthesis will ultimately limit plant growth and survival Correlate the connection in the end products of photosynthesis and respiration and vice versa		Calvin cycle Relate the absorption spectrum of a pigment to its color. Compare the function of the two photosystems (cyclic and non cyclic) in green plants Evaluate how ATP and NADH is generated in the light reaction. Infer how the Calvin cycle produces glucose. They were able to synthesized the importance of light, water and CO2 for the light and dark reaction of photosynthesis along with the role of stomata	
August	**Respiration in plants**	To make the student	Able to analyse the cause of	To compare the rate of respiration in germinating	Understand and	To compare

	Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient	understand the mechanism of Glycolysis and relate it with other physiological process. To make them differentiate between Fermentation/Anaerobic and Aerobic respiration	aerobic and anaerobic respiration Evaluate the process of fermentation in daily food items Will be able to describe how glucose, fats, and proteins enter pathways for energy Explain the structure and role of ATP and how it releases energy	seeds (carbohydrate, proteins and fats) 2.To prove anaerobic respiration takes place in yeast.(alcohol fermentation) 3. To prove CO_2 is given out during respiration (aerobic) *https://amrita.olabs.edu.in/?sub=79&brch=17&sim=204&cnt=671*	be able to discuss the metabolic pathway for the catabolism of glucose. Be able to identify key intermediates and the location of the key processes in cellular respiration. Learners will be able to explain the chemiosmotic mechanism of ATP synthesis. Explain how glucose, fats, and proteins enter pathways for energy release.	the rate of respiration in germinating seeds (carbohydrate, proteins and fats) **Assignment**
September-24	**Body fluids and circulation** • **Blood and its function** • **Blood groups (ABO and Rh System)** • **Blood clotting** • **Human Heart and its working**	**Body fluids and circulation** To make them aware about different components of Blood To differentiate between blood and Lymph (tissue fluid) Blood groups and Rh	To emphasized on development of skills like observational, experimental and inculcating values like Care and Safety, , Responsibility, Awareness**.** Students will be able to analyse the importance of blood group during blood transfusion and	1.To observe the permanent slide of blood cells 2.To test blood group and Rh factor. 3.To make a punnette square to prove the blood group detected by analysis satisfies the phenotypic ratio by crossing the parental blood groups. https://vlab.amrita.edu/?sub=3&brch=69&sim=192&cnt=1	The learners learnt and understood about the different components of blood , blood groups and mechanism of blood clotting.	To make a punnette square to prove the blood group detected by analysis satisfies the phenotypic ratio by

	• **Cardiovascular diseases** • **Lymphatic system**	factor. To make them understand about the mechanism of blood clot To make them comprehend the mechanism of Double circulation in humans To explain the mode of Regulation of cardiac Activity To make them aware about various disorders of Circulatory System To educate them with various technologies used to treat cardiac disorder	child birth They could interpret the cause of haemophilia The learners analysed the importance of pacemaker during cardiac failure		The learners comprehended and analysed the cardiac cycle They understood the mechanism of heart beat and interpreted it with pacemaker. The students learnt to evaluate between the normal and abnormal cardiograms The students analysed and interpreted various causes of cardiovascular diseases	crossing the parental blood groups.
September	**Excretory System** • Human excretory system • Physiology of	**Excretory System** To make the familiarize with the different parts of Human excretory	The students will be able to analyse that kidney failure can lead to haemodialysis or renal transplantation	1.To analyze the presence of sugar, bile salts, urea in urine	The students understood the physiology of excretion	1.To analyze the presence of sugar, bile salts, urea in

	excretion • Countercurrent Mechanism of Urine concentration • Function of Kidney • Kidney disorders • Artificial Kidney • Renal Transplantation	system To explain about the mechanism of Urine formation Micturition To make them aware about different disorders of Excretory system To educate them with various technologies used to treat renal disorder To make them understand the application of haemodialysis	Students will be able to apply the knowledge that accumulation of bile salts can lead to kidney stone and gout	https://amrita.olabs.edu.in/?sub=79&brch=17&sim=207&cnt=622 https://amrita.olabs.edu.in/?sub=79&brch=17&sim=206&cnt=534 https://amrita.olabs.edu.in/?sub=79&brch=17&sim=208&cnt=610 https://amrita.olabs.edu.in/?sub=79&brch=17&sim=211&cnt=686	The student comprehended the mechanism of excretion The learners analysed when dialysis and renal transplant is essential	urine Assignment
September	**Morphology of flowering Plants** General characters of root stem leaves and flowers Modification of root, stem, leaves, inflorescence Flower its parts Taxonomical description of Flower Fruit and its Classification Seeds and its types Taxonomical description of some Important Families like Solanaceae, Fabaceae,	**Morphology of flowering Plants** To make the students understand about various morphological features of plants and their modified parts like Root, Stem, Leaf, Inflorescence, Flower To identify different types of inflorescence, flower, leaves according to the acquired knowledge.	To acquire skills like observation, hypothesis framing, hypothesis testing, articulation of content using scientific vocabulary. To develop their drawing skills by making them draw intricate plant parts and label them for better understanding Understand how ecological factors in a particular habitat, influence the modification of root, stem and	1.To observe different types of roots and modified roots. 2.To observe different types of stems, leaves roots and flowers. 3.To observe different types modified leaves, stem, roots and inflorescence. 4. To observe and study different types of seeds 5.Spotting – To identify and comment on the specimens of root stem and leaf modification. 6. To study and display different types of flower and make its floral diagram and formula	The students will understand the different types of modification in root, stem and leaves They would be able to apply the knowledge of different technical aspects of flower in identifying the different families by drawing the	To study and display different types of flower and make its floral diagram and formula

	Liliaceae	To make them understand and analyze different types of Fruits and Seeds To make them identify, understand and analyze the technical description of flowering plant and interpret with some Important Families	leaf Students will learn how crop science relates to the economy and environment, both currently and in the future. Students will understand how the environment influences plant growth and crop yields, and ways to modify the environment to improve plant growth and yields. Students will be able to identify soil types and will be able to identify ways to improve soil fertility as well as reduce soil erosion and improve water quality and	https://amrita.olabs.edu.in/?sub=79&brch=17&sim=198&cnt=2	floral parts and floral formula. Students will understand basic principles, processes and functions of plant growth and reproduction, including photosynthesis, respiration, transpiration, vegetative growth and reproductive growth, fertilization and fruit formation Identifying the parts of a typical flower and the function of each part. Identifying types of fleshy and dry fruits and will know how simple, aggregate, and multiple fruits are derived from the flowers. Explaining the	

					adaptations of fruits and seeds to the agents by which they are dispersed. Explaining the changes that occur when a seed germinates and environmental conditions necessary. Explaining the factors that control dormancy and describing how these may be broken both naturally and artificially. Students will be able to identify plant vegetative and reproductive structures. Students will understand how the environment influences plant growth and crop yields, and ways	

					to modify the environment to improve plant growth and yields. Students will understand the factors affecting the need to find sustainable practices for Students will understand the nutritive value of fruits, nuts and vegetables in the human diet	
September	**Anatomy of Flowering Plants** Meristematic tissue Permanent Tissue Tissue System Primary Structure of Root Internal structure of monocot and dicot root, leaf and stem Secondary growth in Stem	**Anatomy of Flowering Plants** To make them comprehend from the previous knowledge about Tissues and Tissue System To make the students understand about the anatomy of Anatomy of Dicotyledons and Monocotyledons roots, stem and leaves To make them understand the concept	Calculate the age of the trees Design Experimental setups and undergo hypothesis testing; Apply the different Microscopic techniques in observing the anatomy of leaf, stem, root. Examine Oral and written presentation of their own work Students will develop scientific temperament and inquisitiveness, observational, diagrammatic, accuracy, analysis.	To prepare temporary mount of monocot stem and root and dicot stem and root and observe under microscope. https://amrita.olabs.edu.in/?sub=79&brch=17&sim=192&cnt=675	The students will understand the internal structure of root and stem of dicot and monocot plants. They will evaluate the role of vascular bundles in the secondary growth Learners will be able to calculate the age of trees by counting the	**Assignment**

		of Secondary Growth and its mechanism To make them study and understand about different Plant Life Cycles and Alternation of Generations	Relate plant anatomy in wood technology, archaeology, forensics, and paleontology; learn more about how organisms are put together and how they work Address plant diseases and stressful condition To emphasized on development of skills like observational, diagrammatical and experimental and inculcating values like Creativity (while drawing the diagram), Awareness by identifying the location of different tissues of plant They would be able to apply the knowledge of different technical aspects of flower in identifying the different families.		annual rings The students will be able to draw, identify and describe vascular patterns in stems and roots of vascular plants with and without secondary growth; Students will develop creativity, decision making, analysis, accuracy and logical thinking in them.	

	Structural organization in animals					

Month & Working Days	Theme/ Sub-theme	Learning Objectives		Activities & Resources	Expected Learning Outcomes	Assessment
		Subject Specific (Content Based)	**Behavioural (Application based)**			
October-22	**Locomotion and Movement** Types of movement - ciliary, flagellar, muscular; skeletal muscle-contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal system -.	Students will be able to- Classify the skeleton system into Axial and Appendicular system Categorize different types of muscles. Analyze anatomical structures of skeleton in relationship to their physiological functions. Summerise the mechanism of muscle contraction Judge the cause of different Muscular Disorders -	To apply the learning to determine the effect of contractile proteins and Ca^{+2} in muscle contraction. Able to differentiate between male and female skeletal system. Able to justify muscular disorder due to chromosomal abbrebiations - myasthenia gravis (break down in communication between nerves and muscles), tetany(defect in chromosome 22), muscular dystrophy(gene that make protein is defective) and	Activity- 1.Explore the bones, muscles and joints in human skeletal system. 2. Puzzle - Assemble bones of human skeleton- 3.Identifying different activities by using different muscles striated, non striated and smooth muscles 4. Role play of synovial joints with various day to day life activities.	Students- Identify all the bones of the appendicular and axial skeleton on a human skeleton model. Will Compare between male and female skeletons, and differentiate between the bones of individuals at different ages Discussed bones are hard but still needs to be protected. So we should wear helmets when we ride two wheelers Prescribed one should visit a orthopedic doctor if one has broken any bone, cartilage , ligament. Concluded Food with calcium are (fish, cheese, yogurt, milk, cheese, spinach and yogurt)and vitamin D (fish, cheese, eggs,	Half yearly (10 Oct – 21 Oct 2019). Study of different types of bones and cartilage of human body by models

			auto immune disorder (arthritis, osteoporosis, gout**)** Students will integrate the ability to advocatefor personal, family and community health. Propose aging related changes in the muscular system Prescribe how exercise can help to maintain a healthy muscular system of the body		yolk) Appraised muscles need exercise to stay healthy and grow strong. Pointed out the roles of calcium (Ca^{2+}) and ATP in muscle contraction Manipulated the major risk factors for different muscular disorders (osteoporosis, arthiritis etc) and its prevention.	
November-20	**Neural control and Coordination** Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system;	Students – Will study several major organs that function as a part of nervous system. Outline the need of communication systems within the humans to respond the changes in the internal and external environment. Discuss the role of different sensory	Able to evaluate how information passes from one neuron to another. Analyze how an action potential is generated and propagated Summarize how alcohol, nicotine, drugs, cocaine, heroin, and marijuana affect the nervous system. Infer how rods and	Activity -1. Sketch various parts of brain assess various function of it. Activities -2 –Distinguish between classical (pavlovian) conditioning and instrumental (operant) conditioning and understand how they work separately and together to influence human behavior in the world outside the laboratory Different activities to observe the reflex action in day to day life eg; by observing sudden with drawl of finger or hand with hot, cold water or pointed objects, jerking of knee when	Student- Will be able to describe function of brain, spinal cord, and nerves after modelling each part's job in the nervous system. Will demonstrate that the nervous system is responsible for communication between different parts of the body , detecting stimuli in the body and directing body's responses. Describe the structure of a typical neuron and indicate the	Spotting Unit Test Assignment To draw T.S. of Cochlea and Eye

	generation and conduction of nerve impulse; reflex action; sensory perception; sense organs; elementary structure and functions of eye and ear.	receptors in humans in converting different forms of energy into nerve impulse Draw and label the major parts of the brain and spinal cord and explain their functions; Learn and understand about different types of neuron, CNS and PNS; somatic and autonomic motor neurons. List the visual pathways of the eye and study the mechanism of Sensory Reception and Processing. Describe the pathway that leads to hearing. Comprehend the role of sensory receptors in humans in converting different forms of energy into nerve impulses.	cones in eye helps in identifying different colours. Categorize and interpret the cause of different hormonal diseases To explore about Reflex Action and Arc and analyze critically its involvement with day to day life. Analyse and interpret the cause of different hormonal diseases	hit below knee cap. Pupilary light reflex. Closing of eye when strong light is suddenly focused on it. Ocular reflex is lacrimal reflex. Watering of mouth by seeing delicious food. Students can share experiences on brain and spinal cord diseases that they came across.	function(s) of each of its parts. Explain what is meant by resting membrane potential and depolarization and understand how they are associated with transmission of a nerve impulse. Assess the two kinds of gated membrane channels and how they are associated with ion movement through a cell membrane. Understand how an action potential is transmitted along a nerve and why it spreads only in one direction. Conclude the importance of a chemical transmission of the nervous impulse across synapses. Identify the chemical(s) and describe the events associated with transmission of a nerve impulse across a neuromuscular junction. Analysed the concept of reflex action, voluntary and involuntary actions and could apply in real life situation	

		Describe the structure of a sensory neuron and a motor neuron, and outline their functions in a reflex arc. Describe and explain the transmission of an action potential in a myelinated neuron. (The importance of sodium and potassium ions in the impulse transmission should be emphasised.) Outline the roles of synapses in the nervous system in determining the direction of nerve impulse transmission, and in allowing the interconnection of nerve pathways Sequence the order of urinary structures that reflect the pathway of urine.				

	Chemical Coordination and Integration Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes,	State the chief symptom(s), cause(s) and treatment(s) for the following malfunctions: nephritis, kidney stones, & kidney failure. Infer the effect of hormones for the changes in human after puberty Appreciate the role of hormone to cope stress. Realize the role of plant hormones in regulating the process of phototropism, geotropism, hydrotropism, chemotropism etc. Illustrate examples from daily life to relate the effect of hormones on living system. Learn to imbibe positive qualities of others and ignore the	Identify and describe the effects of the hormones that are released by the anterior pituitary gland. Know what stimulates their production and where they are produced. Understand how the regulation of GH, PRL, and MSH differs from that of TSH, ACTH, LH, and FSH. Describe and give an example of negative feedback inhibition in the endocrine system Analyse and interpret the role of different hormones and its secretion in the life	Brain Storming Activity –Name the hormone Case studies related to hormonal deficiency like thyroid, insulin	Analyse and interpret the role of different hormones and its secretion in the life span of the organism. Interpret and describe various plant movements with phytohormones. Locate various endocrine glands in the body like pituitary, thyroid, parathyroid, thymus, adrenals, pancreas and reproductive organs in humans and mention their functions Relate the hormonal imbalance with hormone related disorders in humans; Understand the coordination in plants- Hormones and Movements.	Assignment

	Addison's disease.	negative one	span of the organism. Locate various endocrine glands in the body like pituitary, thyroid, parathyroid, thymus, adrenals, pancreas and reproductive organs in humans and mention their functions relate the hormonal imbalance with hormone related disorders in humans; Understand the coordination in plants-Hormones and Movements are involved with the regulation of blood glucose.			
Dec-20	**Transport in Plants** Movement of water, gases and nutrients; cell to cell transport, Diffusion, facilitated diffusion, active transport;	Students will - Be familiar with various terms of transportation in plants Interrelate about the long distance transport of water through transpiration pull or capillary action. understand the	To make them link the importance of uptake and transport of Mineral nutrients to the leaf with the process of photosynthesis. Evaluate how water and minerals move upward through the xylem and how water balance keeps plants upright.	To study Osmosis (endosmosis and exosmosis) using potato osmometer. To study plasmolysis and de-plasmolysis in cells To determine the imbibitions percentage in raisins Demonstration of path of ascent of sap. Demonstration of root pressure. To observe the rate of transpiration in upper and lower surface of leaves	Students will-Understand how water and minerals move upward through the xylem and how water balance keeps plants upright. Will be able to comprehend the roles of plasmodesmata and aquaporins Describe the relationship between osmosis, energy, and water potential and the various physical forces that are involved in water	UT-II (Dec 20 – 23)

	plant-water relations, Imbibition, water potential, osmosis, plasmolysis; distance transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport, massflow hypothesis; diffusion of gases	concept of transpiration and relate it with other physiological process like photosynthesis linking the importance of uptake and transport of Mineral nutrients to the leaf with the process of photosynthesis. Understanding and analyzing the mode of transportation of food through Phloem Evaluating the role of the endodermis and the Casparian strip in maintaining turgidity of roots. understanding how the forces of adhesion and cohesion and the process of transpiration aid in the transportation of water through the plant.	Learners can analysed why some plants may die when their roots are submerged, in water for longer time. Relate the concept of diffusion , osmosis and plasmolysis to day to day life.		potential. Relate root pressure to guttation. Explain the relationships among water potential, solute potential, and pressure potential. Explain the role of the endodermis and the Casparian strip. Can infer why root hairs are usually turgid Describe the factors that regulate the rate of transpiration. Include the following factors in your answer: epidermis, stomata, CO2, sun, K+, humidity, proton pumps, abscisic acid, water potential, light. What other factors are involved. Explain why some plants may die when their roots are submerged, that is, flooded, for long periods of time. What adaptations allow plants to live in fresh water? In salt water? Explain why phloem transport is considered a bidirectional process. What is phloem loading?	

					What transport process is primarily responsible for transport in the phloem?	
Jan-23	**Mineral Nutrition** Essential minerals, macro- and micronutrients and their role; deficiency symptoms; mineral toxicity; elementary idea of hydroponics as a method to study mineral nutrition; nitrogen metabolism, nitrogen cycle, biological nitrogen fixation	To explain and make them understand about different Plant growth regulators and their function To make them analyse growth and development with different growth regulators and its importance in day to day life. To make them differentiate between Photoperiodism Vernilisation	Learners will be able to apply and explain the functions of minerals with reference to the techniques of hydro and aeroponic Analyse various deficiency symptoms of macro and micro nutrients Analyze the factors affecting plant growth and importance of growth regulators; Categorise among short-day plants, long-day plants and day-neutral plants; Devise various types of movement in plants related to various abiotic factors	To make a slide of bacterial root nodule and observe and draw the cell. Demonstration of hydrophonics growth system by providing nutrient solution. To collect different leaves from school garden/house garden/road side and relate the deficiency symptom if any by nutrient deficiency of particular element.	Students will- Judge the nutrients that are essential for plant growth Understand the importance of Hydroponics and nutrient solution Summerize the importance of soil characters with respect to nutrient availability Understand and discuss the metabolic pathway for the catabolism	
Jan-	**Cell** Cell, Cell Theory,	To make them comprehend and to	To emphasized on development of skills like observational and	To observe the different stages of meiosis through permanent slides To prepare the onion root tip slide	**1.** Learner learnt and understood about cell and structural organization of cell.	Assignment

	Overview of cell, prokaryotic and Eukaryotic cell	connect with the earlier understanding s about the cell and its organelle To make them understand about the Cell theory and its different Discoveries and inventions of Cell To make them differentiate between prokaryotic and eukaryotic; unicellular and multicellular To make the students able to understand about totipotent cell and its various application in day to day life	experimental and inculcating values like division of labor and team work (as all the organelles divide the work among themselves), leadership(as nucleus work as controlling unit), obedience (as all organelles obey the command of controlling unit) Students will be able to identify that cuts and wound heals due to the process of cell division They will be sensitized and will be able to apply their knowledge that genetic disorder cannot be cured. They will be analyzing that formation of one organelle facilitates the formation of other organelle which will inculcate the value of coordination. They will interpret and will be able to share their opinion on	and to observe different stages of mitosis	2. Skills like observational and experimental were developed in the students and values like division of labor and team work (as all the organelles divide the work among themselves), leadership (as nucleus work as controlling unit), obedience (as all organelles obey the command of controlling unit) were inculcated among the students. 3. Students were able to identified that cuts and wound heals due to the process of cell division 4. They were sensitized that genetic disorder cannot be cured. 5. They were able to analyze that formation of one organelle lead the formation of other organelle which inculcated the value of coordination, obedience etc. 6. Students ability were enhanced to understand the mechanism of different organelles with reference to their importance in vital role of life 7.Understand the basic concepts of a cell and its role in development and formation of an embryo. 8.Explain what stem cells are and	

			evolution of self autonomous organelles like- Mitochondria and chloroplast Discuss social and ethical issues and impact of stem cell technology. Describe the significance of stem cell technology and application in medicine and public health.		their potential applications. 9.Describe the techniques involved in creating, maintaining and studying stem cells. 10.Discuss social and ethical issues and impact of stem cell technology. 11.Describe the significance of stem cell technology and application in medicine and public health.	
Jan	**Plant - Growth and Development** Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators -	To make the student understand about growth and Development To make them comprehend the above concept and relate it with Differentiation, Dedifferentiation and Re-differentiation To explain and make them understand about different Plant growth regulators and their function To make them analzse growth and	Differentiate between growth and development and explain growth curve; Analyze the factors affecting plant growth and importance of growth regulators; Differentiate among short-day plants, long-day plants and day-neutral plants; Identify the effects of salt stress and water stress on plants; Analyze various types	To observe phototrophism in plants. To observe chemotrophism –growth of pollen tube in stigma To observe the effect of plant growth regulators auxin* and gibberlin* in plant growth. Auxin- Surface sterilized seeds allowed to germinate in moist filter paper. When roots of seedlings become 1cm in length root length is measured. Half seedling are grown in test solution containing auxin and half normally in moist soil. Length of the root will be observed after 48 hrs.	Learn the elements present in biomolecules and the difference between monomers and polymers. Explain the role of water in synthesis and breakdown of polymers. List the four major complex biomolecules found in living cells, three of which are found on food labels and the basis for grouping of biomolecules into those four groups. For each group of biomolecules learn the name of its generic monomer (simple unit) and polymer (complex structure) and	

	auxin, gibberellin, cytokinin, ethylene, ABA; seed dormancy; vernalisation; photoperiodism	development with different growth regulators and its importance in day to day life. To make them differentiate between Photoperiodism and vernalization Restate the conditions necessary for seed germination Explain the mode of phytohormones Explain various types of tropic movement	of movement like geotropism, phototropism, nastic and turgor movements		their function. Identify their chemical elements of carbohydrate and the differentiate between simple sugars and complex carbohydrates. Proteins: Identify their chemical elements and functional groups . Recognize the structure of an amino acid and the peptide bond that connects di-, tri, and polypeptides. Recognize the presence of 20 amino acids and that not all are essential amino acids.	
	Cell Dvision	Students will be able to Explain the terms Cell Cycle and Cell Division Describe the various stages of Mitosis and Meosis List the significance of Mitosis and Meosis	To emphasized on development of skills like observational and experimental and inculcating values like division of labor and team work (as all the organelles divide the work among themselves), leadership(as nucleus work as controlling unit), obedience (as all organelles obey the	Students observed various stages of cell division by observing the slides of mitosis	List the four stages of interphase, and describe the major events that occur during each stage in preparation for cell division. Describe the difference between mitosis and cytokinesis. List the checkpoints that regulate the progression of cells through the cell cycle. Explain the mechanisms within	Assignment

			command of controlling unit) Students will be able to identify that cuts and wound heals due to the process of cell division They will be sensitized and will be able to apply their knowledge that genetic disorder cannot be cured. They will be analyzing that formation of one organelle facilitates the formation of other organelle which will inculcate the value of coordination. They will interpret and will be able to share their opinion on evolution of self autonomous organelles like- Mitochondria and plasmid		the G1 cell cycle checkpoint that evaluate growth signals, determine nutrient availability, and assess DNA integrity. **Mitosis and Cytokinesis** Describe the structure of a eukaryotic chromosome. Define chromosome and chromatid. Explain how a chromosome is duplicated. List the phases of mitosis in a eukaryotic cell, and discuss the major events that happen during each phase. Compare and contrast cytokinesis in animal and plant cells. Explain the difference between therapeutic and reproductive cloning of animals. **The Cell Cycle and Cancer** List the characteristics of cancer cells. Describe how mutations in	

					oncogenes and tumor suppressor genes contribute to cancer. **Prokaryotic Cell Division** Describe the process of binary fission. Contrast the roles of cell division in unicellular versus multicellular organisms.	
	Biomolecules	Students will be able to- Understand about the Primary and Secondary metabolites Understand about the structure and function of different Bio macromolecules and enzymes Relate the function of biomolecules and enzymes in day to day life List some inorganic substances and mineral elements in cell Compare primary secondary and tertiary	The students will be able to The students will be able to understand the structure of carbohydrate protein and fat Analyse on the food labels, what do sugar or sugar alcohol, and fiber refer to? Compare the structure and function of the following carbohydrates and where they are found: glucose, glycogen, starch, cellulose, chitin. Explain protein denaturation and the effect of heat on protein	Test the presence of protein fat and carbohydrate in food samples To prove heat destroys the activity of enzymes and not the catalyst. 2. to prove that change of pH inhibits the enzyme activity.	Summarize the function of proteins and recognize the importance of the three dimensional shape of a protein on its function and the role of non-covalent bonds in maintaining the shape of a protein. Evaluate differentiation, defifferentiation and redifferentiation by observing the different plant tissue and organs. Analyse the effect of different	Assignments

		structure of proteins Discuss the structure and function of DNA and RNA	structure and function. Lipids: Identify their chemical elements and learn their property of insolubility in water.		growth regulators in the life cycle Understand about photoperiodism and vernilisation Analyse the different tropic movements in plants in day to day life	
Feburary-05	**Revision**					

Term-II

Month & Working Days	**Theme/ Sub-theme**	**Learning Objectives**		**Activities & Resources**	**Expected Learning Outcomes**	**Assessment**
		Subject Specific (Content Based)	**Behavioural (Application based)**			
October-22	**Locomotion and Movement** Types of movement - ciliary, flagellar, muscular; skeletal muscle-contractile proteins and muscle contraction; skeletal system and its	Students will be able to- Classify the skeleton system into Axial and Appendicular system Categorize different types of muscles. Analyze anatomical structures of skeleton in relationship to their physiological functions.	To apply the learning to determine the effect of contractile proteins and Ca^{+2} in muscle contraction. Able to differentiate between male and female skeletal system. Able to justify muscular disorder due to chromosomal abbrebiations - myasthenia gravis (break down in	Activity- 1.Explore the bones, muscles and joints in human skeletal system. 2. Puzzle - Assemble bones of human skeleton- 3.Identifying different activities by using different muscles striated, non striated and smooth muscles 4. Role play of synovial joints with various day to day life activities.	Students- Identify all the bones of the appendicular and axial skeleton on a human skeleton model. Will Compare between male and female skeletons, and differentiate between the bones of individuals at different ages Discussed bones are hard but still needs to be protected. So we should wear helmets when we ride two wheelers Prescribed one should visit a	Half yearly (10 Oct – 21 Oct 2019). Study of different types of bones and cartilage of human body by models

	functions; joints; disorders of muscular and skeletal system -.	Summerise the mechanism of muscle contraction Judge the cause of different Muscular Disorders -	communication between nerves and muscles), tetany(defect in chromosome 22), muscular dystrophy(gene that make protein is defective) and auto immune disorder (arthritis, osteoporosis, gout**)** Students will integrate the ability to advocatefor personal, family and community health. Propose aging related changes in the muscular system Prescribe how exercise can help to maintain a healthy muscular system of the body		orthopedic doctor if one has broken any bone, cartilage , ligament. Concluded Food with calcium are (fish, cheese, yogurt, milk, cheese, spinach and yogurt)and vitamin D (fish, cheese, eggs, yolk) Appraised muscles need exercise to stay healthy and grow strong. Pointed out the roles of calcium (Ca^{2+}) and ATP in muscle contraction Manipulated the major risk factors for different muscular disorders (osteoporosis, arthiritis etc) and its prevention.	
November-20	**Neural control and Coordination** Neuron and nerves; Nervous system in	Students – Will study several major organs that function as a part of nervous system. Outline the need of communication	Able to evaluate how information passes from one neuron to another. Analyze how an action potential is generated and propagated	Activity -1. Sketch various parts of brain assess various function of it. Activities -2 –Distinguish between classical (pavlovian) conditioning and instrumental (operant) conditioning and understand how they work separately and together to influence	Student- Will be able to describe function of brain, spinal cord, and nerves after modelling each part's job in the nervous system. Will demonstrate that the nervous	Spotting Unit Test Assignment To draw T.S. of Cochlea and Eye

	humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse; reflex action; sensory perception; sense organs; elementary structure and functions of eye and ear.	systems within the humans to respond the changes in the internal and external environment. Discuss the role of different sensory receptors in humans in converting different forms of energy into nerve impulse Draw and label the major parts of the brain and spinal cord and explain their functions; Learn and understand about different types of neuron, CNS and PNS; somatic and autonomic motor neurons. List the visual pathways of the eye and study the mechanism of Sensory Reception and Processing. Describe the pathway	Summarize how alcohol, nicotine, drugs, cocaine, heroin, and marijuana affect the nervous system. Infer how rods and cones in eye helps in identifying different colours. Categorize and interpret the cause of different hormonal diseases To explore about Reflex Action and Arc and analyze critically its involvement with day to day life. Analyse and interpret the cause of different hormonal diseases	human behavior in the world outside the laboratory Different activities to observe the reflex action in day to day life eg; by observing sudden with drawl of finger or hand with hot, cold water or pointed objects, jerking of knee when hit below knee cap. Pupilary light reflex. Closing of eye when strong light is suddenly focused on it. Ocular reflex is lacrimal reflex. Watering of mouth by seeing delicious food. Students can share experiences on brain and spinal cord diseases that they came across.	system is responsible for communication between different parts of the body , detecting stimuli in the body and directing body's responses. Describe the structure of a typical neuron and indicate the function(s) of each of its parts. Explain what is meant by resting membrane potential and depolarization and understand how they are associated with transmission of a nerve impulse. Assess the two kinds of gated membrane channels and how they are associated with ion movement through a cell membrane. Understand how an action potential is transmitted along a nerve and why it spreads only in one direction. Conclude the importance of a chemical transmission of the nervous impulse across synapses. Identify the chemical(s) and describe the events associated with transmission of a nerve impulse across a neuromuscular	

		that leads to hearing. Comprehend the role of sensory receptors in humans in converting different forms of energy into nerve impulses. Describe the structure of a sensory neuron and a motor neuron, and outline their functions in a reflex arc. Describe and explain the transmission of an action potential in a myelinated neuron. (The importance of sodium and potassium ions in the impulse transmission should be emphasised.) Outline the roles of synapses in the nervous system in determining the direction of nerve impulse transmission, and in allowing the interconnection of nerve pathways			junction. Analysed the concept of reflex action, voluntary and involuntary actions and could apply in real life situation	

	Chemical Coordination and Integration Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity	Sequence the order of urinary structures that reflect the pathway of urine. State the chief symptom(s), cause(s) and treatment(s) for the following malfunctions: nephritis, kidney stones, & kidney failure. Infer the effect of hormones for the changes in human after puberty Appreciate the role of hormone to cope stress. Realize the role of plant hormones in regulating the process of phototropism, geotropism, hydrotropism, chemotropism etc. Illustrate examples	Identify and describe the effects of the hormones that are released by the anterior pituitary gland. Know what stimulates their production and where they are produced. Understand how the regulation of GH, PRL, and MSH differs from that of TSH, ACTH, LH, and FSH. Describe and give an	Brain Storming Activity –Name the hormone Case studies related to hormonal deficiency like thyroid, insulin	Analyse and interpret the role of different hormones and its secretion in the life span of the organism. Interpret and describe various plant movements with phytohormones. Locate various endocrine glands in the body like pituitary, thyroid, parathyroid, thymus, adrenals, pancreas and reproductive organs in humans and mention their functions Relate the hormonal imbalance with hormone related disorders in humans; Understand the coordination in plants- Hormones and Movements.	Assignment

	and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.	from daily life to relate the effect of hormones on living system. Learn to imbibe positive qualities of others and ignore the negative one	example of negative feedback inhibition in the endocrine system Analyse and interpret the role of different hormones and its secretion in the life span of the organism. Locate various endocrine glands in the body like pituitary, thyroid, parathyroid, thymus, adrenals, pancreas and reproductive organs in humans and mention their functions relate the hormonal imbalance with hormone related disorders in humans; Understand the coordination in plants-Hormones and Movements are involved with the regulation of blood glucose.			
Dec-20	**Transport in Plants** Movement of water, gases	Students will - Be familiar with various terms of transportation in plants	To make them link the importance of uptake and transport of Mineral nutrients to the leaf with the process of	To study Osmosis (endosmosis and exosmosis) using potato osmometer. To study plasmolysis and de-plasmolysis in cells To determine the imbibitions	Students will-Understand how water and minerals move upward through the xylem and how water balance keeps plants upright.	UT-II (Dec 20 – 23)

	and nutrients; cell to cell transport, Diffusion, facilitated diffusion, active transport; plant-water relations, Imbibition, water potential, osmosis, plasmolysis; distance transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport,	Interrelate about the long distance transport of water through transpiration pull or capillary action. understand the concept of transpiration and relate it with other physiological process like photosynthesis linking the importance of uptake and transport of Mineral nutrients to the leaf with the process of photosynthesis. Understanding and analyzing the mode of transportation of food through Phloem Evaluating the role of the endodermis and the Casparian strip in maintaining turgidity of roots. understanding how the forces of adhesion and	photosynthesis. Evaluate how water and minerals move upward through the xylem and how water balance keeps plants upright. Learners can analysed why some plants may die when their roots are submerged, in water for longer time. Relate the concept of diffusion , osmosis and plasmolysis to day to day life.	percentage in raisins Demonstration of path of ascent of sap. Demonstration of root pressure. To observe the rate of transpiration in upper and lower surface of leaves	Will be able to comprehend the roles of plasmodesmata and aquaporins Describe the relationship between osmosis, energy, and water potential and the various physical forces that are involved in water potential. Relate root pressure to guttation. Explain the relationships among water potential, solute potential, and pressure potential. Explain the role of the endodermis and the Casparian strip. Can infer why root hairs are usually turgid Describe the factors that regulate the rate of transpiration. Include the following factors in your answer: epidermis, stomata, CO2, sun, K+, humidity, proton pumps, abscisic acid, water potential, light. What other factors are involved. Explain why some plants may die when their roots are submerged, that is, flooded, for long periods	

	massflow hypothesis; diffusion of gases	cohesion and the process of transpiration aid in the transportation of water through the plant.			of time. What adaptations allow plants to live in fresh water? In salt water? Explain why phloem transport is considered a bidirectional process. What is phloem loading? What transport process is primarily responsible for transport in the phloem?	
Jan-23	**Mineral Nutrition** Essential minerals, macro- and micronutrients and their role; deficiency symptoms; mineral toxicity; elementary idea of hydroponics as a method to study mineral nutrition; nitrogen metabolism, nitrogen cycle, biological nitrogen	To explain and make them understand about different Plant growth regulators and their function To make them analyse growth and development with different growth regulators and its importance in day to day life. To make them differentiate between Photoperiodism Vernilisation	Learners will be able to apply and explain the functions of minerals with reference to the techniques of hydro and aeroponic Analyse various deficiency symptoms of macro and micro nutrients Analyze the factors affecting plant growth and importance of growth regulators; Categorise among short-day plants, long-day plants and day-neutral plants;	To make a slide of bacterial root nodule and observe and draw the cell. Demonstration of hydrophonics growth system by providing nutrient solution. To collect different leaves from school garden/house garden/road side and relate the deficiency symptom if any by nutrient deficiency of particular element.	Students will- Judge the nutrients that are essential for plant growth Understand the importance of Hydroponics and nutrient solution Summerize the importance of soil characters with respect to nutrient availability Understand and discuss the metabolic pathway for the catabolism	

	fixation		Devise various types of movement in plants related to various abiotic factors			
Jan-	**Cell** Cell, Cell Theory, Overview of cell, prokaryotic and Eukaryotic cell	To make them comprehend and to connect with the earlier understanding s about the cell and its organelle To make them understand about the Cell theory and its different Discoveries and inventions of Cell To make them differentiate between prokaryotic and eukaryotic; unicellular and multicellular To make the students able to understand about totipotent cell and its various application in day to day life	To emphasized on development of skills like observational and experimental and inculcating values like division of labor and team work (as all the organelles divide the work among themselves), leadership(as nucleus work as controlling unit), obedience (as all organelles obey the command of controlling unit) Students will be able to identify that cuts and wound heals due to the process of cell division They will be sensitized and will be able to apply their knowledge that genetic disorder cannot be cured. They will be analyzing that formation of one organelle facilitates the	To observe the different stages of meiosis through permanent slides To prepare the onion root tip slide and to observe different stages of mitosis	**1.** Learner learnt and understood about cell and structural organization of cell. 2. Skills like observational and experimental were developed in the students and values like division of labor and team work (as all the organelles divide the work among themselves), leadership (as nucleus work as controlling unit), obedience (as all organelles obey the command of controlling unit) were inculcated among the students. 3. Students were able to identified that cuts and wound heals due to the process of cell division 4. They were sensitized that genetic disorder cannot be cured. 5. They were able to analyze that formation of one organelle lead the formation of other organelle which inculcated the value of coordination, obedience etc. 6. Students ability were enhanced to understand the mechanism of different organelles with reference to their importance in vital role of life	Assignment

			formation of other organelle which will inculcate the value of coordination. They will interpret and will be able to share their opinion on evolution of self autonomous organelles like- Mitochondria and chloroplast Discuss social and ethical issues and impact of stem cell technology. Describe the significance of stem cell technology and application in medicine and public health.		7.Understand the basic concepts of a cell and its role in development and formation of an embryo. 8.Explain what stem cells are and their potential applications. 9.Describe the techniques involved in creating, maintaining and studying stem cells. 10.Discuss social and ethical issues and impact of stem cell technology. 11.Describe the significance of stem cell technology and application in medicine and public health.	
Jan	**Plant - Growth and Development** Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiatio	To make the student understand about growth and Development To make them comprehend the above concept and relate it with Differentiation, Dedifferentiation and Re-differentiation	Differentiate between growth and development and explain growth curve; Analyze the factors affecting plant growth and importance of growth regulators; Differentiate among short-day plants, long-	To observe phototrophism in plants. To observe chemotrophism –growth of pollen tube in stigma To observe the effect of plant growth regulators auxin* and gibberlin* in plant growth. Auxin- Surface sterilized seeds allowed to germinate in moist filter paper. When roots of seedlings	Learn the elements present in biomolecules and the difference between monomers and polymers. Explain the role of water in synthesis and breakdown of polymers. List the four major complex biomolecules found in living cells, three of which are found on	

	n and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA; seed dormancy; vernalisation; photoperiodism	To explain and make them understand about different Plant growth regulators and their function To make them analzse growth and development with different growth regulators and its importance in day to day life. To make them differentiate between Photoperiodism and vernalization Restate the conditions necessary for seed germination Explain the mode of phytohormones Explain various types of tropic movement	day plants and day-neutral plants; Identify the effects of salt stress and water stress on plants; Analyze various types of movement like geotropism, phototropism, nastic and turgor movements	become 1cm in length root length is measured. Half seedling are grown in test solution containing auxin and half normally in moist soil. Length of the root will be observed after 48 hrs.	food labels and the basis for grouping of biomolecules into those four groups. For each group of biomolecules learn the name of its generic monomer (simple unit) and polymer (complex structure) and their function. Identify their chemical elements of carbohydrate and the differentiate between simple sugars and complex carbohydrates. Proteins: Identify their chemical elements and functional groups . Recognize the structure of an amino acid and the peptide bond that connects di-, tri, and polypeptides. Recognize the presence of 20 amino acids and that not all are essential amino acids.	
	Cell Dvision	Students will be able to Explain the terms Cell Cycle and Cell	To emphasized on development of skills like observational and experimental and inculcating values like	Students observed various stages of cell division by observing the slides of mitosis	List the four stages of interphase, and describe the major events that occur during each stage in preparation for cell division.	Assignment

		Division Describe the various stages of Mitosis and Meosis List the significance of Mitosis and Meosis	division of labor and team work (as all the organelles divide the work among themselves), leadership(as nucleus work as controlling unit), obedience (as all organelles obey the command of controlling unit) Students will be able to identify that cuts and wound heals due to the process of cell division They will be sensitized and will be able to apply their knowledge that genetic disorder cannot be cured. They will be analyzing that formation of one organelle facilitates the formation of other organelle which will inculcate the value of coordination. They will interpret and will be able to share their opinion on evolution of self autonomous organelles		Describe the difference between mitosis and cytokinesis. List the checkpoints that regulate the progression of cells through the cell cycle. Explain the mechanisms within the G1 cell cycle checkpoint that evaluate growth signals, determine nutrient availability, and assess DNA integrity. **Mitosis and Cytokinesis** Describe the structure of a eukaryotic chromosome. Define chromosome and chromatid. Explain how a chromosome is duplicated. List the phases of mitosis in a eukaryotic cell, and discuss the major events that happen during each phase. Compare and contrast cytokinesis in animal and plant cells. Explain the difference between therapeutic and reproductive	

			like- Mitochondria and plasmid		cloning of animals. **The Cell Cycle and Cancer** List the characteristics of cancer cells. Describe how mutations in oncogenes and tumor suppressor genes contribute to cancer. **Prokaryotic Cell Division** Describe the process of binary fission. Contrast the roles of cell division in unicellular versus multicellular organisms.	
	Biomolecules	Students will be able to- Understand about the Primary and Secondary metabolites Understand about the structure and function of different Bio macromolecules and enzymes Relate the function of biomolecules and enzymes in day to day	The students will be able to The students will be able to understand the structure of carbohydrate protein and fat Analyse on the food labels, what do sugar or sugar alcohol, and fiber refer to? Compare the structure and function of the	Test the presence of protein fat and carbohydrate in food samples To prove heat destroys the activity of enzymes and not the catalyst. 2. to prove that change of pH inhibits the enzyme activity.	Summarize the function of proteins and recognize the importance of the three dimensional shape of a protein on its function and the role of non-covalent bonds in maintaining the shape of a protein.	Assignments

		life List some inorganic substances and mineral elements in cell Compare primary secondary and tertiary structure of proteins Discuss the structure and function of DNA and RNA	following carbohydrates and where they are found: glucose, glycogen, starch, cellulose, chitin. Explain protein denaturation and the effect of heat on protein structure and function. Lipids: Identify their chemical elements and learn their property of insolubility in water.		Evaluate differentiation, defifferentiation and redifferentiation by observing the different plant tissue and organs. Analyse the effect of different growth regulators in the life cycle Understand about photoperiodism and vernilisation Analyse the different tropic movements in plants in day to day life	
Feburary-05	**Revision**					