



EVALUATION SCHEME		
Theory		
Units	Title	Marks
I	Diversity of Living Organisms	15
II	Structural Organization in Plants and Animals	10
III	Cell: Structure and Function	15
IV	Plant Physiology	12
V	Human Physiology	18
Total (Theory)		70
Total (Practical)		30
Total (Theory+Practical)		100

Unit/ Month	Chapter name / Learning Outcome	Practical and Competency Skill Based Activities/ Experiential Learning	Skills	Assessments
Unit 1: (April-May)	<p>The Living World</p> <p>Learning Outcome:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> Describe the Need for classification; three domains of life; taxonomy and systematics Explain the concept of species and taxonomical hierarchy; binomial nomenclature <p>Biological Classification</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> Explain Five kingdom classification; Illustrate Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids <p>Plant Kingdom</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Classify plants into major groups; Describe Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnosperms. <p>Animal Kingdom</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Discuss salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category). <p>(No live animals or specimen should be displayed.)</p>	<p>Specimens/slides/models and identification with reasons - Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.</p> <p>3. Virtual specimens/slides/models and identifying features of - Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation</p> <p>Communication skills: Scientific communication, teamwork, listening and interpretation</p> <p>Emotional and social development: Curiosity and Exploration, responsibility and ethics</p> <p>Academic and career Readiness: Preparation for STEM careers</p>	<p>Oral Test/</p> <p>Class test/</p> <p>Quizzes / lab activity</p>

<p>Unit 2</p> <p>(June-July)</p>	<p>Morphology of Flowering Plants</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Explain Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Describe family Solanaceae <p>Anatomy of Flowering Plants</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Summarize Anatomy and functions of tissue systems in dicots and monocots <p>Structural Organisation in Animals</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Discuss Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog. 	<p>-Study and describe locally available common flowering plants, from family Solanaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams), type of root (tap and adventitious); type of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound).</p> <p>Different types of inflorescence (cymose and racemose)</p> <p>Preparation and study of T.S. of dicot and monocot roots and stems.</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation</p> <p>Communication skills: Scientific communication, teamwork, listening and interpretation</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Preparation for STEM careers</p>	<p>Oral Test/</p> <p>Class test/</p> <p>Quizzes / lab activity</p>
<p>Unit 3</p> <p>(Aug- Sep)</p>	<p>Cell: Structure and Function</p> <p>Cell-The Unit of Life</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Explain Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; Draw and explain basic cell organelle's structure and function; endomembrane system, endoplasmic reticulum, golgi 	<p>Parts of a compound microscope</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation</p> <p>Communication skills: Scientific communication,</p>	<p>Oral Test/</p> <p>Class test/</p> <p>Quizzes / lab activity</p>

	<p>bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.</p> <p>Biomolecules</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Discuss Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids Describe Enzyme - types, properties, enzyme action. (Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents – Concept of Metabolism, Metabolic Basis of Living, The Living State) <p>Cell Cycle and Cell Division</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Explain the process of Cell cycle, mitosis, meiosis and their significance 		<p>teamwork, listening and interpretation</p> <p>Emotional and social development: Curiosity and exploration</p> <p>Academic and career readiness: Preparation for STEM careers</p>	
<p>Unit 4</p> <p>(Oct)</p>	<p>Photosynthesis in Higher Plants</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Explain Photosynthesis as a means of autotrophic nutrition; site of photosynthesis. Discuss pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis. Differentiate cyclic and non-cyclic photophosphorylation 	<p>Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.</p> <p>Study of osmosis by potato osmometer</p> <p>Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or fleshy scaly leaves of onion bulb).</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation</p> <p>Communication skills: Scientific communication,</p>	<p>Oral Test/</p> <p>Class test/</p> <p>Quizzes / lab activity</p>

	<ul style="list-style-type: none"> ● Illustrate chemiosmotic hypothesis; photorespiration; C3 and C4 pathways ● Analyze factors affecting photosynthesis. <p>Respiration in Plants</p> <p>Students will be able to</p> <ul style="list-style-type: none"> ● Explain Exchange of gases in plants ; cellular respiration - glycolysis, fermentation (anaerobic), ● Draw TCA cycle and electron transport system (aerobic) ● Describe energy relations - number of ATP molecules generated; amphibolic pathways ● Discuss respiratory quotient <p>Plant - Growth and Development</p> <p>Students will be able to</p> <ul style="list-style-type: none"> ● Explain Seed germination; phases of plant growth and plant growth rate; conditions of growth ● Define the terms differentiation, dedifferentiation and redifferentiation ● Discuss the sequence of developmental processes in a plant cell; ● Illustrate brief description about growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA 	<p>Study of distribution of stomata on the upper and lower surfaces of leaves.</p> <p>Comparative study of the rates of transpiration in the upper and lower surfaces of leaves</p> <p>Separation of plant pigments through paper chromatography</p> <p>Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.</p> <p>Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.</p>	<p>teamwork, listening and interpretation</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Preparation for STEM careers</p>	
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Unit 5	Breathing and Exchange of Gases		Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills	Oral Test/ Class test/ Quizzes
(Nov-Dec)	Students will be able to <ul style="list-style-type: none"> ● Illustrate the concept of Respiratory organs in animals (recall only); Respiratory system in humans; ● Describe mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume. ● Discuss disorders related to respiration - asthma, emphysema, occupational respiratory disorders. Body Fluids and Circulation Students will be able to <ul style="list-style-type: none"> ● Explain Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; ● Draw and describe human circulatory system - Structure of human heart and blood vessels; ● Illustrate cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity ● Enlist disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure. Excretory Products and their Elimination Students will be able to <ul style="list-style-type: none"> ● Define the terms ammonotelism, ureotelism, uricotelism; ● Explain human excretory system – structure and function; urine formation, osmoregulation; ● Review regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; ● Discuss disorders - uremia, renal failure, renal calculi, nephritis; 	<ul style="list-style-type: none"> ● Test for presence of urea in urine. ● Test for presence of sugar in urine. ● Test for presence of albumin in urine. ● Test for presence of bile salts in urine. 	Practical and technical skills: Experimentation Communication skills: Scientific communication, teamwork, listening and interpretation Emotional and social development: Curiosity and exploration, patience and perseverance Academic and career readiness: Preparation for STEM careers	Oral Test/ Class test/ Quizzes / lab activity

	<ul style="list-style-type: none"> Describe dialysis and artificial kidney, kidney transplant. <p>Locomotion and Movement</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Classify different types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; Explain skeletal system and its functions; joints; Describe disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout. <p>Neural Control and Coordination</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Explain Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system. Analyze generation and conduction of nerve impulse. <p>Chemical Coordination and Integration</p> <p>Students will be able to</p> <ul style="list-style-type: none"> Discuss human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea) Explain the role of hormones as messengers and regulators Describe hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease. 	Human skeleton and different types of joints with the help of virtual images/models only.		
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PRACTICALS

Time: 03 Hours

Max. Marks: 30

Evaluation Scheme		Marks
One Major Experiment Part A		5 Marks
One Minor Experiment Part A		4 Marks
Slide Preparation Part A		5 Marks
Spotting Part B		7 Marks
Practical Record + Viva Voce	(Credit to the students’ work over the academic session may be given)	4 Marks
Project Record + Viva Voce		5 Marks
Total		30 Marks