

Curriculum
Subject – Biology (044)
Session 2022-23
Class - XI

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.	Practical and Competency Skill Based Activities/ Experiential Learning	Skills	Assessments
Unit 1: (May- June)	<p>The Living World</p> <p>Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature</p> <p>Biological Classification Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids</p> <p>Plant Kingdom Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations</p> <p>Animal Kingdom 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). (No live animals or specimen should be displayed.)</p>	<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>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>	Knowledge, Understanding, Application, Analysis and Evaluation	Oral Test/ Class test/ Quizzes / lab activity

<p>Unit 2 (July-Aug)</p>	<p>Morphology of Flowering Plants Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae</p> <p>Anatomy of Flowering Plants Anatomy and functions of tissue systems in dicots and monocots</p> <p>Structural Organisation in Animals Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.</p>	<p>Different types of inflorescence (cymose and racemose)</p> <p>Preparation and study of T.S. of dicot and monocot roots and stems (primary)</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes / lab activity</p>
<p>Unit 3 (Sep-Oct)</p>	<p>Cell: Structure and Function :Cell-The Unit of Life 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; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.</p> <p>Biomolecules Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; 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> <p>Cell Cycle and Cell Division Cell cycle, mitosis, meiosis and their significance</p>	<p>Parts of a compound microscope</p> <p>Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes / lab activity</p>
<p>Unit 4 (Nov)</p>	<p>Photosynthesis in Higher Plants Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.</p>	<p>Study of osmosis by potato osmometer</p> <p>Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or flashy scale leaves of onion bulb).</p> <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 Separation of plant pigments through paper chromatography</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes / lab activity</p>

	<p>-:Respiration in Plants 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</p> <p>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 - auxin, gibberellin, cytokinin, ethylene, ABA;</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>		
Unit 5 (Dec)	<p>Breathing and Exchange of Gases Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.</p> <p>Body Fluids and Circulation Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.</p> <p>Excretory Products and their Elimination Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant</p> <p>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 systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.</p> <p>Neural Control and Coordination Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse:</p>	<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. <p>Human skeleton and different types of joints with the help of virtual images/models only.</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p> <p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes</p> <p>Oral Test/ Class test/ Quizzes / lab activity</p>

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 goitre, diabetes, Addison's disease.
 Note: Diseases related to all the human physiological systems to be taught in brief.

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