

**MONTHLY SYLLABUS**

**SESSION-2016-17**

**CLASS-XI**

**SUBJECT : BIOLOGY**

MONTH	CONTENTS
01.07.2016 to 08.07.2016	<b>Orientation and Recapitulation</b> :-Discussion on importance of Biology, scope of Biology, career in Biology and other topics of interest.
11.07.2016 to 30.07.2016	<b>Chapter-1: The Living World: What is living?</b> Biodiversity; Need for classification; <b>Three Domains of life</b> ; Taxonomy and systematics; concept of species and Taxonomical hierarchy; Binomial nomenclature; tools for study of Taxonomy-Museum, Zoological Parks, Herbaria, Botanical Gardens. <b>Chapter-2: Biological Classification:-</b> Five Kingdom Classification; salient features and classification of Monera, Protista and Fungi into major groups: Lichens, viruses and viroids. <b>Chapter- 3: Plant Kingdom:</b> Salient features and classification of Plants into major groups- Algae, Bryophyta, Pteridophyta, Gymnospermae & Angiospermae (three to five salient and distinguishing features and at least two examples of each category); Angiosperms- classification up to class level, characteristic features and examples. <b>Discussion on value based questions.</b> <b>Practicals -1.</b> Study of the parts of a compound microscope. <b>2.</b> Study (through permanent slides/specimens/virtual models) and identification with reasons Bacteria, Oscillatoria, Spirogyra, Rhizopus, Yeast, Mush room, Liverwort, Moss, Fern, Pine, one

	<p>monocotyledonous &amp; one dicotyledonous plant and one lichen.</p> <p><b>YUVA Session: 3.2-</b> ‘Choice’ not ‘chance’, determines destiny</p>
<p>01.08.2016 to 31.08.2016</p>	<p><b>Chapter- 4 Animal Kingdom:</b> Basis of classification, levels of organization, Salient features and Classification of Animals non-chordates up to phyla level- (Porifera, Coelenterata, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata), Hemichordata, Urochordata, Cephalochordata, Vertebrata, Division of Subphylum Vertebrata- (Chordates up to class level) Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and Mammalia. (three to five salient features and at least two examples of each category).</p> <p><b>(No live animals or specimen should be displayed)</b></p> <p><b>Chapter 5 : Morphology of flowering plants:</b> Morphology of different parts of flowering plants - roots, stem, leaf, flower, fruit and seeds. Types of inflorescence, arrangements of leaf (Phyllotaxy), The Flower; Parts of a flower; The fruit; The seed; Structure of a dicotyledonous and Monocotyledonous seeds; Semi- technical Description of a typical flowering plant; Description of some important Families (to be dealt along with the relevant experiment of the practical syllabus)</p> <p><b>Chapter-6: Anatomy of flowering plants:-</b> Plants tissue - Meristematic, permanent. Anatomy of Dicotyledonous and monocotyledonous roots and stems, dorsiventral leaf and isobilateral leaf; secondary growth; vascular cambium; cork cambium; secondary growth in roots.</p> <p><b>Chapter-7: Structural organisation in animals :-</b> Animal tissue: Different types of Epithelial Tissues - Squamous, Cuboidal, Columnar, Ciliated, glandular, their structure and function; Different type of connective tissues - Blood, Bones, Adipose tissues, Cartilage; Muscular tissues -Skeletal, Smooth,</p>

	<p>Cardiac; Nerve tissue. Morphology, anatomy and functions of different systems of an insect (Cockroach) - a brief account only)- digestive, circulatory, respiratory, nervous &amp; reproductive systems.</p> <p><b>Discussion on value based questions.</b></p> <p><b>Practicals-1</b> Identification with reasons and comments on specimens/models - Hydra, Liver fluke, Ascaris. Leech, Earthworm, prawn, Silkworm, Honeybee, Snail, Starfish, shark, Rohu, Frog, lizard, pigeon and rabbit.</p> <p><b>2.</b> Study of different modifications in root, stem and leaves.</p> <p><b>3.</b> Study and identification of different types of inflorescence (cymose and racemose).</p> <p><b>4.</b> Study of any three locally available common flowering plants from Solanaceae, Fabaceae &amp; Liliaceae including dissection.</p> <p>Display of floral part and study of chambers of anther and ovary to show number of chambers (floral formulae and floral diagrams), types of root, stem and leaf.</p> <p><b>Yuva Session 11.10-Respect and care</b></p>
<p>01.09.2016 to 30.09.2016</p>	<p><b>Chapter -8: Cell structure and function:-</b> Cell theory and cell as the basic unit of life. Structure of prokaryotic and eukaryotic cells; Plant 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 &amp; function), Nucleus, nuclear membrane, chromatin, nucleolus.</p> <p><b>Discussion on value based questions.</b></p> <p><b>REVISION OF SUMMATIVE ASSESSMENT-I SYLLABUS</b></p> <p><b>Practicals:-</b> 1. Preparation and study of T.S of Dicot and</p>

	<p>Monocot roots and stems (primary).</p> <p>2. Study of Tissues and Diversity in shapes and sizes of plant &amp; animal cells (palisade cells, Guard cells, Parenchyma, collenchyma, Sclerenchyma, Xylem, Phloem, Squamous epithelium, Muscle Fibers and Mammalian Blood Smear) through temporary/permanent slides.</p> <p>3. Study of external morphology of cockroach through virtual images / model.</p> <p><b>YUVA Session 11.3-How can I be Assertive?</b></p> <p><b>First Term Examination- 2016-17</b></p>
<p>01.10.2016 to 31.10.2016</p>	<p><b>Chapter-9 : Biomolecules :</b> Chemical constituents of living Cells: Biomolecules, primary &amp; secondary molecules, structure &amp; function of proteins, Carbohydrates, lipids, nucleic acids, enzymes - types, properties, enzyme action.</p> <p><b>Chapter-10 : Cell cycle &amp; Cell division :</b> Cell cycle; Different phases/stages of mitosis and meiosis cell divisions, significance of mitosis &amp; meiosis.</p> <p><b>Chapter-11 : Transport in Plants:</b> Movement of water, gases and nutrients, Cell to cell transport, Diffusion, Facilitated diffusion, active transport; plant-water relations, imbibition, Water potential, osmosis, plasmolysis, long 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, Mass flow hypothesis, diffusion of gases.</p> <p><b>Discussion on value based questions.</b></p> <p><b>Practicals:-</b>1. Study of osmosis by potato osmometer. 2.Test for the presence of sugar, starch, proteins &amp; fats. To detect these in suitable plants and animal material.</p>

	<p>3. Study of mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.</p> <p>4. Study of Plasmolysis in epidermal peel e.g. Rhoeo leaves.</p> <p>5. Observation and comments on the experimental setup for showing (a) Suction due to transpiration, (b) Anaerobic respiration.</p> <p><b>YUVA Session No. 11.8- Hearty Kaathi Rolls!</b></p>
<p>01.11.2016 to 30.11.2016</p>	<p><b>Chapter -12: Mineral Nutrition:</b> Essential mineral elements - criteria for essentiality, Role of macro &amp; micro nutrients, deficiency symptoms of essential elements, mineral toxicity, Elementary idea of Hydroponics as a method to study mineral nutrition; Nitrogen metabolism, nitrogen cycle, biological nitrogen fixation (Nodule formation).</p> <p><b>Chapter -13 : Photosynthesis in higher plants:</b> Photosynthesis as a mean 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; C<sub>3</sub> and C<sub>4</sub> pathways, factors affecting photosynthesis.</p> <p><b>Chapter-14: Respiration in plants:</b> 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><b>Chapter-15 : Plant growth and development: seed germination;</b> phases of plant growth &amp; 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; seed dormancy, vernalisation; photoperiodism.</p>

	<p><b>Discussion on value based questions.</b></p> <p><b>Practicals:-</b> 1. Separation of plant pigments through paper chromatography.</p> <p>2. Study of rate of transpiration in the upper and lower surface of leaves.</p> <p>3. Study of rate of respiration in flower buds/leaf tissue and germinating seeds.</p> <p>4. Observation &amp; comments on the experimental set up for (a) effect of apical bud removal (b) photo-tropism.</p> <p>5. Study of imbibition in seeds/raisin.</p> <p>6. Study of distribution of stomata in the upper &amp; lower surface of leaves.</p> <p><b>YUVA Session 3.6 If there was a Bomb Threat!</b></p>
<p>01.12.2016 to 31.12.2016</p>	<p><b>Chapter-16 : Digestion and Absorption:</b> Alimentary canal &amp; digestive glands, role of digestive enzymes and gastrointestinal hormones, peristalsis, digestion, absorption &amp; assimilation of proteins, carbohydrates and fats, calorific values of proteins, carbohydrates and fats; egestion, nutritional &amp; digestive disorders – PEM (Marasmus and Kwashiorkar), indigestion, constipation, vomiting, jaundice, diarrhea, deficiency diseases.</p> <p><b>Chapter -17 : Breathing &amp; Exchange of gases:</b> Respiratory organs in animals (recall only). Respiratory system in humans. Mechanism of breathing and its regulation in human - exchange of gases, transport of gases and regulation of respiration, Respiratory volume, disorders related to respiration-asthma, emphysema, occupational respiratory disorders.</p> <p><b>Chapter-18: Body fluids and circulation:</b> Composition of blood, blood groups, coagulation of blood, composition of lymph &amp; its function, Human circulatory system- Structure of human heart and blood vessels, cardiac cycle, cardiac output,</p>

	<p>E.C.G.; Double circulation, regulation of cardiac activity, disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.</p> <p><b>Chapter-19: Excretory products and their elimination:</b> 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-lungs, liver and skin. Disorders of excretory system-uremia, renal failure, Renal calculi, nephritis, dialysis and artificial kidney.</p> <p><b>Discussion on value based questions.</b></p> <p><b>Practicals:-</b> 1. Preparation of T.S of Dicot and Monocot roots and stems (primary). 2. To detect presence of urea, sugar, albumin and bile salts in urine.</p>
01.01.2017 to 15.01.2017	<b>WINTER BREAK</b>
16.01.2017 to 31.01.2017	<p><b>Chapter-20: Locomotion and movement:</b> Types of movement - Ciliary, flagellar, Muscular; Skeletal muscle-contractile proteins &amp; muscle contraction, skeletal system and its functions; joints; Disorders of Muscular and Skeletal System - Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, osteoporosis, gout.</p> <p><b>Chapter-21: Neural control and coordination :</b> Neuron and nerves, nervous system in humans - Central Nervous System, Peripheral Nervous System and <b>Visceral Nervous system</b>, generation and conduction of nerve impulse, reflex action, sensory perception, sense organs, Elementary structure and functions of eye, and ear, nose and tongue.</p>

	<p><b>Discussion on value based questions.</b></p> <p><b>Practical:</b> Study of Human skeleton and different types of joints with the help of virtual images/models only.</p> <p><b>Revision and practice of practicals.</b></p>
01.02.2017 to 18.02.2017	<p><b>Chapter-22 : Chemical Coordination and integration:</b> Endocrine glands and hormones, Human endocrine system - Hypothalamus, Pituitary, pineal, thyroid, parathyroid, Adrenal, pancreas, gonads (Testis and ovaries); 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, Addison's disease, (diabetes insipidus), Graves' disease.</p> <p><b>Note:</b> Disease related to all the human physiological systems to be taught in brief.</p> <p><b>Practice of OTBA.</b></p> <p><b>Discussion on value based questions.</b></p> <p><b>Revision of 2<sup>nd</sup> term syllabus and final practical exam.</b></p>
20.02.2017 onwards	<b>COMMON ANNUAL SCHOOL EXAMINATION- 2017</b>

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