Odisha Board Class 11 Biology Syllabus

Biology
Ist year Science (Theory)

Unit I: Diversity in living world
Unit II: Structural organization in animals and plants
Unit III: Cell structure and function
Unit IV: Plant physiology
Unit V: Human physiology

I. Diversity in Living World **(Periods 10)**

a. What is living? Biodiversity; Need for classification; three domains of life; Taxonomy and Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Tools for study of Taxonomy- Museum, Zoos, herbaria, Botanical gardens.
b. Five Kingdom classification**;** Salient features and classification of Monera, Protista and Fungi into major groups; Lichens; Viruses and Viroids.
c. Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms (three to five salient and distinguishing features and at least two examples of each category); Angiosperms- classification up to class, characteristic features and examples.
d. Salient features and classification of animals- non-chordates up to phyla level and chordates up to classes level (three to five salient features and at least two examples).

II. Structural Organization in Animals and Plants **(Periods 12)**

a. Morphology and modification in plants; Tissues; Anatomy and functions of different parts of flowering plants- Root, stem, Leaf; inflorescence- cymose and racemose; flower, fruit and seed (Tobe dealt along with the relevant practical of the Practical Syllabus).
b. Animal tissues (epithelial, connective, muscular, nervous); Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (cockroach). (Brief account only).

III. Cell Structure and Function

a. Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell; Plant cell and animal cell; Cell envelope, cell membrance, cell wall; Cell organelles structure and function; Endomembrance system- endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; Cytoskeleton,, cilia, flagella, centrioles (ultra structure and function); necleus' neclear membrance, chromatin, necleolus.
b. Chemical constituents of living cells: Biomolecules- structure and function of proteins, carbohydrates, lipid, nucleic acids; Enzymes-types, properties, enzyme action.
Cell division: Cell cycle, mitosis, meiosis and their significance.

IV. Plant Physiology **(Period 16)**

a. Transport in Plants: 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 (brief mention).
b. Mineral Nutrition: Exchange of gases; Cellular respiration- glycolysis, fermentation(anaerobic), TCA cycle and electron transport system (aerobic); Energy relation - Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient.
c. Plant growth and Development: Seed germination; Phases of plant growth and plant growth rate; Conditions of growth; Differentiation, defifferentiation and redifferentiation; Sequence of developmental process in plant cell; Growth regulators-auxin, gibberellin, cytokinin,ethylene, Abscilic acid (ABA); Seed dormancy; Vernalisation; Photoperiodism.

V. Human Physiology **(Periods 30)**

a. Digestion and Absorption: Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; Calorific value of proteins, carbohydrates and fats (brief account); Egestion; Nutritional and digestive disorders- PEM, indigestion, constipation, vomiting, jaundice, diarrhoea.
b. Breathing and Respiration: Respiratory organs in animals (tracheal, brancheal, cutaneous, pulmonary); Respiratory system in humans; Mechanism of respiration (breathing) and its regulation in humans- Exchange of gases, transport of gases, Respiratory volumes; Disorders related to respiration- Asthma, Emphysema, Occupational respiratory disorders.
c. Body fluids Circulation: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; Human circulatory system- Structure and working of human heart, 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.
d. Excretory products and their elimination: Modes of excretion- Ammonotelism, ureotelism, uriocotelism; Human excretory system- structure and function; Mechanism of Urine formation, Osmoregulation: Regulation of kidney function- Reninangiotensin, Artial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders- Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney.
e. Locomotion and Movement: Types of movement- ciliary, flagellar, muscular; Skeletal muscle- contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of Practical Syllabus); Joints; Disorders of muscular and skeletal system- Myasthenia gravis, Tenany, Muscular dystrophy, Arthritis, Osteoporosis, Gout.
f. Neural control and Coordination: Neuron and nerves; Nervous system in humanscentral nervous system (brain, spinal cord), peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action; Sensory perception; Sense organs; Elementary structure and function of eye and ear.

g. Chemical coordination and Regulation: Endocrine glands and hormones; Human endocrine system- Hypothalamus, Pitutary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulatror, Hypo- and hyperactivity and related disorders (Common disorders e.g. Dwarfism, acromegaly, cretinism, goiter, exopthlmic goiter, diabetes, Addison's disease).

(NB: Ib, c; IIa; III and IV units are to be taught by Botany Faculty. Ia, d; IIb; V units are to taught by Zoology Faculty.)