

Revised Syllabus For 2021 session
Biology
1st year Science(Theory)

I. Diversity in Living World (Periods 10)

- a. What is living?, Biodiversity; Need for classification; Three domains of life; Concept of species and taxonomical hierarchy; Binomial nomenclature; (02)
- 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 (three to five salient and distinguishing features and at least two examples of each category);
- 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). (04)

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

- a. Deleted

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 membrane, cell wall; Cell organelles structure and function; Endomembrane system- endoplasmic reticulum, Golgi bodies, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; Cytoskeleton, cilia, flagella, centrioles (ultra structure and function); nucleus' nuclear membrane, chromatin, nucleolus.
- 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. Deleted

- b. Deleted

c. Photosynthesis in Higher Plants (This part is added)

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.

- d: **Respiration:** 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.

e. Plant growth and Development: Growth regulators-auxin, gibberellin, cytokinin, ethylene, Absciscic acid (ABA);

V. Human Physiology (Periods 30)

a. Deleted

b. Breathing and Respiration: Respiratory organs in animals (tracheal, bronchial, 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. (04)

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. (05)

d. Excretory products and their elimination: Modes of excretion- Ammonotelism, ureotelism, uricotelism; Human excretory system structure and function; Mechanism of Urine formation, Osmoregulation: Regulation of kidney function- Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion; Disorders- Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney. (05)

e. Deleted

f. Neural control and Coordination: Neuron and nerves; Nervous system in humans central nervous system (brain, spinal cord), peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; (04)

g. Chemical coordination and Regulation: 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 regulator, Hypo- and hyperactivity and related disorders (Common disorders e.g. Dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease). (04)

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