BIOLOGY (Code No. 044)
Syllabus for 2021-22
CLASS – XI

Term-I

Unit	Content	Marks
I	Diversity of Living Organisms: Chapter - 1, 2, 3 and 4	15
II	Structural Organization in Plants and Animals: Chapter – 5 and 7	08
III	Cell: Structure and Function: Chapter – 8 and 9	12
	Practical	15
	Total	**50**

Term-II

Unit	Content	Marks
III	Cell: Structure and Function: Chapter - 10	05
IV	Plant Physiology: Chapter - 13,14 and 15	12
V	Human Physiology: Chapter –17, 18, 19, 20, 21 and 22	18
	Practical	15
	Total	**50**

Term – I

Unit-I Diversity of Living Organisms

Chapter-1: The Living World
What is living? Biodiversity; Need for classification; three domains of life; concept of species and taxonomical hierarchy; binomial nomenclature.

Chapter-2: Biological Classification
Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Chapter-3: Plant Kingdom
Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta and Gymnospermae. (salient and distinguishing features and a few examples of each category).

Chapter-4: Animal Kingdom
Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and distinguishing features of a few examples of each category).
(No live animals or specimen should be displayed.)

Unit-II Structural Organization in Animals and Plants

Chapter-5: Morphology of Flowering Plants
Morphology of inflorescence and flower, Description of 01 family: Solanaceae or Liliaceae (to be dealt along with the relevant experiments of the Practical Syllabus).

Chapter-7: Structural Organization in Animals
Animal tissues.

Unit-III Cell: Structure and Function

Chapter-8: 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.

Chapter-9: Biomolecules
Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

Practical Term-I

Part-A		
		Marks
One Major Experiment	Experiment No. - 1	04
One Minor Experiment	Experiment No. - 2	03
Part-B		
Spotting (3 Spots of 1 mark each)	B.1, 2, 3	03
Practical Record + Investigatory Project& Record + Viva Voce		05
Total		**15**

Practicals should be conducted alongside the concepts taught in theory classes.
A: List of Experiments.

1. Study and describe a locally available common flowering plant, from any one family: Solanaceae or Liliaceae (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).

2. Study of osmosis by Potato osmometer.

B. Study/Observation of the following (spotting):

B.1 Parts of a compound microscope.

B.2 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.

B.3 Virtual specimens/slides/models and identifying features of - *Amoeba, Hydra,*liverfluke, *Ascaris*, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

Practical Examination for Visually Impaired Students Class XI
Note: The 'Evaluation schemes' and 'General Guidelines' for visually impaired students as given by CBSE may be followed.

A. Items for Identification/Familiarity with the apparatus /equipments/animal and plant material / chemicals etc. for assessment in practicals (All experiments)

- Plants of Solanaceae - Brinjal, Petunia, any other or Liliaceae- Any of the Lilies.
- Compound microscope, Test tube, Petridish, Beaker, Scalpel.

B. List of Practicals:

1. Study one locally available common flowering plants of the family – Solanaceae or Liliaceae and identify inflorescence/flower.

2. Study the parts of a compound microscope- eye piece and objective lens, mirror, stage, coarse and fine adjustment knobs.

Term-II

Unit-III Cell: Structure and Function

Chapter-10: Cell Cycle and Cell Division
Cell cycle, mitosis, meiosis and their significance

Unit-IV Plant Physiology

Chapter-13: 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.

Chapter-14: 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.

Chapter-15: Plant - Growth and Development
Growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

Chapter-17: 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.

Chapter-18: 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.

Chapter-19: 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.

Chapter-20: Locomotion and Movement
Skeletal muscle, contractile proteins and muscle contraction.

Chapter-21: 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.

Chapter-22: 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 goiter, diabetes, Addison's disease.
Note: Diseases related to all the human physiological systems to be taught in brief.

Practical Term-II

Part-A		
		Marks
One Major Experiment	Experiment No. – 3,4	04
One Minor Experiment	Experiment No. – 5,6,7	03
Part-B		
Spotting (3 Spots of 1 mark each)	B .4,5	03
Practical Record + Investigatory Project& Record + Viva Voce		05
Total		**15**

Practicals should be conducted alongside the concepts taught in theory classes.
A: List of Experiments

3. Separation of plant pigments through paper chromatography.
4. Study of distribution of stomata in the upper and lower surfaces of leaves.
5. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
6. Test for presence of sugar in urine.
7. Test for presence of albumin in urine.

B. Study/Observation of the following (spotting):

B.4 Tissues and diversity in shape and size of animal cells (squamous epithelium, smooth, skeletal and cardiac muscle fibers and mammalian blood smear) through temporary/permanent slides.
B.5 Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.

Practical Examination for Visually Impaired Students Class XI
Note: The 'Evaluation schemes' and 'General Guidelines' for visually impaired students as given by CBSE may be followed.

Practicals should be conducted alongside the concepts taught in theory classes.

A. **Items for Identification/Familiarity with the apparatus /equipments/animal and plant material / chemicals etc. for assessment in practicals (All experiments)**

- Mushroom, Succulents such as *Aloe vera*/*Kalanchoe*, Raisins, Potatoes.
- Honey comb, Mollusc shell, Model of cockroach, Pigeon and Star fish.
- Chromatography paper, Chromatography chamber, Alcohol

B. **List of Practicals**

1. Identify the given specimen of a fungus – Mushroom, gymnosperm- pine cone
2. Study honey-bee/butterfly, snail shell, Starfish, Pigeon (through models).

Note: The above Practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:
1. Biology Class-XI, Published by NCERT