

5. BIOLOGY
Class XI (Theory)

One Paper

Time: 3 Hours

70 Marks

1.	Diversity in living world	07
2.	Structural organization in animals and plants	12
3.	Cell: Structure and function	15
4.	Plant physiology	18
5.	. Human Physiology	18
Total		70

I. Diversity in Living World

Diversity of living organisms

Classification of the living organisms (five kingdom classification, major groups and principles of classification within each kingdom).

Systematics and binomial System of nomenclature

Salient features of animal (non-chordates up to phylum level and chordates up to class level) and plant (major groups; Angiosperms up to class) classification, viruses, viroids, lichens
Botanical gardens, herbaria, zoological parks and museums.

II Structural Organisation in Animals and Plants

Tissues in animals and plants.

Morphology, anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence, flower, fruit and seed.

Morphology, anatomy and functions of different systems of an annelid (earthworm), an insect (cockroach) and an amphibian (frog).

III CELL: STRUCTURE AND FUNCTION

Cell: Cell theory; Prokaryotic and eukaryotic cell, cell wall, cell membrane and cell organelles'

(plastids, mitochondria, endoplasmic reticulum, Golgi bodies/dictyosomes, ribosomes, lysosomes, vacuoles, centrioles) and nuclear organization.

Mitosis, meiosis, cell cycle.

Basic chemical constituents of living bodies.

Structure and functions of carbohydrates, proteins, lipids and nucleic acids.

Enzymes: types, properties and function.

IV. Plant Physiology

Movement of water, food, nutrients and gases, Plants and Water Mineral nutrition, Respiration, Photosynthesis, Plant growth and development.

V. Human Physiology

Digestion and absorption.

Breathing and respiration.

Body fluids and circulation.

Excretory products and elimination.

Locomotion and movement.

Neural control and coordination,

chemical coordination and regulation.

Practicals

Time: 3 Hours

Marks : 30

1.	Experiments and spotting	20
2.	Record of one investigatory project and Viva based on the project	05
3.	Class record and Viva based on experiments	05
Total		30

A. List of Experiments

1. Study and describe three locally available common flowering plants from each of the following families (Solanaceae, Fabaceae and Liliaceae) Types of root (tap or adventitious), stem (herbaceous/woody) leaf arrangement/shapes/venation/simple or compound).
2. Preparation and study of T.S. of dicot and monocot roots and stems (primary).
3. Study of osmosis by potato osmometer.
4. Study of plasmolysis in epidermal peels (e.g. Rhoec leaves).
5. Study of distribution of stomata in the upper and lower surface of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surface of leaves.
7. Test for the presence of sugar, starch, proteins and fats. To detect them in suitable plant and animal materials.
8. Separate plant pigments through paper chromatography.
9. To study the rate of respiration in flower buds and germinating seeds.
10. To study effect of salivary amylase on starch.
11. To test the presence of urea, sugar, albumin and bile salts in urine.

B. Study/observation of the following (spotting)

1. Study parts of a compound microscope.
2. Study of the specimens and identification with reasons-Bacteria, *Oscillatoria*, Spirogyra, Rhizopus, Mushroom, Yeast, Liverwort, Moss, Fern, Pines, one monocotyledon and one dicotyledon and one lichen.
3. Study of specimens and identification with reasons-*Amoeba*, *Hydra*, *Liverfluke*, *Ascaris*, *Leech*, *Earthworm*, *Prawn*, *Silkworm*, *Honeybee*, *Snail*, *Starfish*, *Shark*, *Rohu*, *Frog*, *Lizard*, *Pigeon* and *Rabbit*.

4. Study of tissues and diversity in shapes and sizes of plant and animal cells (e.g. palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibres and mammalian blood smear) through temporary/permanent slides.
5. Study of mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.
6. Study of different modifications in root, stem and leaves.
7. Study and identify different types of inflorescences.
8. Study of imbibition in seeds/raisins.
9. Observation and comments on the experimental set up on:
 - a. Anaerobic respiration
 - b. Phototropism
 - c. Apical bud removal
 - d. Suction due to transpiration
10. To study human skeleton and different types of joints.
- 11 . Study of external morphology of earthworm, cockroach and frog through models/ preserved specimens.