2022-23
BIOLOGY(131)

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; Prokanyotic and encaryotic 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	15
2.	Record of one investigatory project and Viva based on the project	05
3.	Class record and Viva based on experiments	05
4.	Continuous Assessment (Unit Test)	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. Rhoeo 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 amalyse 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.

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BIOLOGY (131)
(Theory)
CLASS XII

Time : 3 Hours

One Paper **Marks : 70**

Unit		Marks
1.	Reproduction	14
2.	Genetics and evolution	18
3.	Biology and human Welfare	14
4.	Biotechnology and its applications	10
5.	Ecology and environment	14
	Total	**70**

UNIT-I

I REPRODUCTION

Reproduction in organisms : Asexual and sexual reproduction. Sexual reproduction in flowering plants : Structure of flower, pollination, fertilization, development of seeds and fruits, apomixis and polyembryony.

Human reproduction : Reproductive system in male and female, menstrual cycle, production of gametes, fertilization, implantation, embryo development, pregnancy, parturition and lactation.

Reproductive Health : Population and birth control, contraception and MTP; sexually transmitted diseases, infertility.

UNIT-II

II GENETICS AND EVOLUTION

Mendelian inheritance.

Chromosome theory of inheritance, deviations from Mendelian ratio (gene interaction-incomplete dominance, co-dominance, multiple alleles).

Sex determination in human beings: XX, XY.
Linkage and crossing over.
Inheritance pattern : Mendelian disorders and chromosomal disorders in humans.

DNA and RNA, search for genetic material, replication, transcription, genetic code, translation.

Gene expression and regulation.
Genome and Human Genome Project.
DNA fingerprinting.

Evolution: Origin of life, theories and evidences, adaptive radiation, mechanism of Evolution, origin and evolution of man.

UNIT -III

III BIOLOGY AND HUMAN WELFARE

Basic concepts of immunology, vaccines.
Pathogens, Parasites
Cancer and AIDS
Adolescence and drug / alcohol abuse.

Plant breeding, tissue culture, single cell protein, food production, animal husbandry. Mircobes in household food processing, industrial production, sewage treatment, energy generation, biocontrol agents and biofertilizers.

UNIT -IV

IV BIOTECHNOLOGY AND ITS APPLICATION

Principles and Processes; Recombinant DNA technology; Application in Health and Agriculture; genetically modified (GM) organisms; biosafety issues.

UNIT -V

ECOLOGY & ENVIRONMENT

Ecosystems : components, types, energy flow, nutrient cycling and ecosystem services.

Organism and Population : Organisms and its environment, population and ecological adaptations.

Centres of diversity and conservation for biodiversity, Biosphere reserves, National parks And sancturaries. Environmental issues.

Practicals

Evaluation Scheme	Internal Examiner	External Examiner
Two experiments (4+4)		8
Slide Preparation	4	
Spotting		4
Practical Record	3	
Project Record	3	
Viva based on experiments		3
Continuous Assessment (Unit Test)	5	
Total	15	15

List of Experiments

1. Disect the given flower and display different whorls. Disect anther and ovary to show number of chambers.
2. Study pollen germination on a slide.
3. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
4. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organisms.
5. Study the presence of suspended particulate matter in air at the two widely different sites.
6. Study of plant population density by quadrat method.
7. Study of plant population frequency by quadrat method.
8. Prepare a temporary mount of onion root tip to study mitosis
9. To study the effect of the different temperatures and three different pH on the activity of salivary amylase on starch.

Study/observation of the following (Spotting)

1. Study of flowers adapted to pollination by different agencies (wind, insect)
2. Study of pollen germination on stigma through a permanent slide.
3. Study and identify stages of gamete development i.e. T.S. testis and T.S. ovary through permanent slides. (from any mammal)
4. Study meiosis in onion bud cell or grass hopper testis through permanent slide.
5. Study of T.S. of blastula through permanent slide.
6. Study Mendelian inheritance using seeds of different colour/size of any plant.
7. Study prepared pedigree charts of genetic traits such as rolling of tongue, blood groups, widow's peak, colour blindness.
8. Exercise on controlled pollination-Emasculation, tagging and bagging.

9. To identify common disease causing organisms like *Ascaris, Entamoeba, Plasmodium,* Ringworm through permanent slide or specimen. Comment on symptoms of diseases that they cause.
10. Study two plants and two animals found in xerophytic condition. Comment upon their adaptations/morphological.
11. Study plants and animals found in aquatic conditions. Comment upon their adaptations/ morphological.