BIOLOGY

The present syllabus reinforces the ideas introduced in the lower classes while the students learn new concepts besides getting an exposure to contemporary areas of the subject. The syllabus also aims at emphasizing on the underlying principles which are common to both animals and plants as well as highlighting the relationship of biology with other areas of knowledge. The format of the syllabus allows a simple, clear, consequential flow of concepts without any jarring jumps. The syllabus also stresses on the connection of the study of Biology to real life problems, use of biological discoveries/innovations in everyday life– in environment, industry, health and agriculture. The updated syllabus also focuses on reducing the curriculum load while ensuring that ample opportunities and scope for learning and appreciating basic concepts of the subject continue to be available within its framework.

The prescribed syllabus is expected to

- Promote understanding of basic principles of biology
- encourage learning of emerging knowledge and its relevance to individual and society
- Promote rational/specific attitude to issues related to population, environment and development
- Enhance awareness about environmental issues and problems and the appropriate solutions
- Create awareness amongst the learners about variations amongst the living, and developing respect for the diversities and to appreciate that the most complex biological phenomena are also built on essentially simple processes.

It is expected that the students would get an exposure to various branches of Biology in the syllabus in a more contextual and friendly manner as they study its various units.

SYLLABUS FOR HIGHER SECONDARY FIRST YEAR COURSE

One Paper **Time : Three Hours** **Marks 70**

Unitwise Distribution of Marks and Periods :

Unit No.	Title	*Marks*	Periods
Group-A	**BOTANY**		
Unit-1	Diversity in living world (A–E)	07	15
Unit-2	Structural organization in plants (A, B)	08	20
Unit-3	Cell : Structure and function (A)	06	10
Unit-4	Plant Physiology	14	45
		35	
Group-B	**ZOOLOGY**		
Unit-1	Diversity in living world (F, G)	04	5
Unit-2	Structural organisation in animals.(C, D)	05	10
Unit-3	Cell : Structure and function (B–E)	12	30
Unit-4	Human Physiology	14	45
	Total Marks- 70	35	180

Unitwise Distribution of Course contents :

Unit-1 : Diversity of living world

A : Diversity of living organisms

B : Classification of living organisms (Five kingdom classification, major groups and principles of classification within each kingdom)

C : Systematics and binomial system of nomenclature.

D : Salient features of plant (major groups : Angiosperm upto sub class), Classification.

E : Botanical gardens, herbaria

F : Salient features of animals (non-chordates upto phylum level and chordates upto class level)

G : Zoological parks and museums.

Unit-2 : Structural Organisation in Plants and Animals.

A : Tissues in plants

B : Morphology, anatomy and functions of different parts of flowering plants : Roots, stem, leaf, inflorescence, flower, fruits and seed.

C : Tissues in animals

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

Unit-3 : Cell structures and functions

A : Cell : Cell wall, cell membrane, cell organelles (plastids, mitochondria, endoplasmic reticulum,Golgi bodies/dictyosomes, ribosomes, lysosomes, vacuoles, centrioles) and nuclear organisations.

B : Mitosis, Meiosis, Cell-cycle.

C : Basic chemical constituents of living bodies.

D : Structure and function of Carbohydrates, proteins, lipids and nucleic acids.

E : Enzymes : Types, properties and functions.

Unit-4 : Plant Physiology

A : Movement of water and food

B : Plants and water

C : Mineral nutrition

D : Photosynthesis

E : Respiration

F : Plant growth and development

Unit-5 : Human Physiology

A : Digestion and absorption

B : Breathing and respiration

C : Body fluids and circulation

D : Excretory products and their elimination

E : Locomotion and movement

F : Control and coordination

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SYLLABUS FOR BOTANY PRACTICAL

Marks - 15

1. Study parts of compound microscope.
2. Study of the specimens and identification with reasons- Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, Yeast, liverwort, moss, fern, Pinus, one monocotyledon, one dicotyledon and one lichen.
3. Study of tissues and diversity in shapes and sizes of plant cells (e.g. palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem) through temporary/permanent slides.
4. Study of mitosis in onion root tip cells (permanent slides).
5. Study of different modifications in root, stem and leaves.
6. Study and identify different types of inflorescences.
7. Study and describe three common flowering plants (Solanaceae, Fabaceae and Liliaceae).
8. Preparation and study of t.s. of dicot and monocot roots and stems (normal).
9. Study of osmosis by potato osmometer.
10. Study of imbibition in seeds/raisins
11. Study of distribution of stomata in the upper and lower surface of leaves.
12. Study rates of respiration in flower buds/leaf tissue and germinating seeds.
13. Observation and comments on the experimental set up on :
    (a) Anaerobic respiration
    (b) Phototropism
    (c) Apical bud removal
    (d) Suction due to transpiration

SYLLABUS FOR ZOOLOGY PRACTICAL

Marks - 15

1. Study of specimens and identification with reasons - Amoeba, Hydra, Liverfluke, Ascaris, Leech, Earthworm, Prawn, Silk worm, Honeybee, Snail, Starfish, Shark, Rohu, Forg, Lizard, Pigeon and Rabbit.
2. Study of tissues and diversity in shapes and sizes of animal cells (e.g. squamous - epithlium, muscle fibres and mammalian blood smear) through temporary/permanent slides.
3. Study of external morphology of earthworms, cockroach and frog through models.
4. Test for the presence of sugar, starch, proteins and fats in suitable biological materials.
5. Study effect of different temperature upon salivary gland amylase on starch.
6. To test the presence of urea in urine.
7. To detect the presence of sugar in urine/blood sample.
8. To detect the presence of albumin in urine.
9. To detect the presence of bile salts in urine.
10. To study human skeleton and different types of joints.