



SYLLABUS - 2024- 2025

CLASS - XI

SUBJECT - BIOLOGY

Total Marks - 70

Practical - 30

COURSE STRUCTURE

UNIT-I : DIVERSITY OF LIVING ORGANISMS

Chapter-1: The Living World

Biodiversity, Need for classification, three domains of life, taxonomy and systematics, 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

Classification of plants into major groups, Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded- Angiosperms, Plant Life Cycle and Alternation of Generations).

Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates upto class level (salient features and at a few examples of each category). (No live animals or specimen should be displayed.)

UNIT-II STRUCTURAL ORGANIZATION IN PLANTS AND ANIMALS

Chapter-5: Morphology of Flowering Plants

Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae (* Fabaceae & Liliaceae excluded).

Chapter-6: Anatomy of Flowering Plants

Anatomy and functions of tissue systems in dicots and monocots.

Chapter-7: Structural Organisation in Animals

Morphology, Anatomy and functions of different systems (digestive, circulatory respiratory, nervous and reproductive) of frog. (Earthworm and cockroach excluded).



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 and nucleic acids; Enzyme- types, properties, enzyme action. (Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents Concept of Metabolism, Metabolic Basis of Living, The Living State).

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

Seed germination; phases of plant growth and plant growth rate, conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; plant 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, uticotelism; human excretory system- structure and function, urine formation, osmoregulation, regulation of kidney function- rennin- 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

Types of movement- ciliary, flagellar, muscular, skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints, disorders of muscular and skeletal systems- myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

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. (Sense organs: Eye & ear excluded).

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 goitre, diabetes, Addison's diseases.

Note: Diseases related to all the human physiological systems to be taught in brief.



CLASS- XI
SUB- BIOLOGY
(PRACTICAL)

Evaluation Scheme		Marks
One Major Experiment Part A (Experiment No. 1, 3, 7 & 8)		6 Marks
One Minor Experiment Part A (Experiment No. 6, 9, 10, 11, 12 & 13)		5 Marks
One Slide Preparation Part A (Experiment No. 2, 4 & 5)		5 Marks
Spotting Part B		4 Marks
Viva		2 Marks
Lab Note Book		3 Marks
Attendance		5 Marks
Total		30 Marks

A: LIST OF EXPERIMENTS:-

1. Study and describe locally available common flowering plants, from family Solanaceae (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), type of root (tap and adventitious; type of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound)
2. Preparation and study of TS 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/Lily leaves or flashy scale leaves of onion bulb).
5. Study of distribution of stomata on the upper and lower surfaces of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surfaces of leaves.
7. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.
8. Separation of plant pigments through paper chromatography.
9. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
10. Test for presence of urea in urine.
11. Test for presence of sugar in urine.
12. Test for presence of albumin in urine.
13. Test for presence of bile salts in urine.

B. STUDY AND OBSERVE THE FOLLOWING (SPOTTING):

1. Parts of a compound microscope.
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.
3. Virtual specimens/slides/models and identifying features of Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
4. Mitosis in onion root tip cells and animals' cells (grasshopper) from permanent slides.
5. Different types of inflorescence (cymose and racemose)
6. Human skeleton and different types of joints with the help of virtual images/models only.



CLASS- XI
SUB- BIOLOGY

HALF-YEARLY EXAMINATION: 2024-2025

BLUE-PRINT OF DISTRIBUTION OF MARKS

Unit	Chapter	Contents	MCQ (1)	VSA (1)	SA-I (2)	SA-II (3)	LA-I (4)	LA-II (5)	Total Marks
I	1	Living world সজীব জগৎ	-	1x1	2x1	-	-	-	03
	2	Biological Classification জীববিদ্যা সম্পর্কিত শ্রেণীবিন্যাস	1x1	1x1	-	-	4x1	-	06
	3	Plant Kingdom উদ্ভিদ জগৎ	1x1	1x1	2x2	3x1	-	-	09
	4	Animal Kingdom প্রাণী জগৎ	1x1	1x1	2x1	3x1	-	-	07
II	5	Morphology of Flowering plant সপুষ্পক উদ্ভিদের গঠন	1x2	1x1	-	-	-	5x1	08
	6	Anatomy of flowering plant সপুষ্পক উদ্ভিদের অন্তর্গঠন	1x1	-	2x1	-	4x1	-	07
	7	Structural organisation in Animals প্রাণীদের গঠনগত অঙ্গসংস্থান	1x1	1x1	-	3x1	-	-	05
III	8	Cell: Unit of life কোষ জীবনের একক	1x1	-	2x1	3x1	4x1	-	10
	9	Biomolecules জৈব অণুসমূহ	1x1	1x2	2x1	-	-	-	05
	10	Cell cycle and Cell division কোষচক্র এবং কোষ বিভাজন	1x1	1x2	2x1	-	-	5x1	10
Total Marks			1x10 (10)	1x10 (10)	2x8 (16)	3x4 (12)	4x3 (12)	5x2 (10)	70
Total No. of Questions			10	10	8	4	3	2	37

N.B.: Question Setter will include 2 Nos "OR" questions in LA-I Section and another, 2 Nos "OR" Questions in LA II Section"

"OR" Question must be selected from same chapter/unit of syllabus. (2024-25)



CLASS- XI
SUB- BIOLOGY

ANNUAL EXAMINATION: 2024-2025
BLUE-PRINT OF DISTRIBUTION OF MARKS

Unit	Chapter	Contents	MCQ (1)	VSA (1)	SA-I (2)	SA-II (3)	LA-I (4)	LA-II (5)	Total Marks
IV	13	Photo synthesis in higher plants উন্নত উদ্ভিদে সালোকসংশ্লেষ	1x1	1x2	2x1	3x1	4x1	-	12
	14	Respiration in plants উদ্ভিদে শ্বসন	1x1	1x2	2x2	-	-	5x1	12
	15	Plant Growth & Development উদ্ভিদের বৃদ্ধি ও বিকাশ	1x2	1x2	2x1	-	-	-	06
V	17	Breathing and exchange of gases শ্বাসকার্য এবং গ্যাসের আদান প্রদান	1x1	-	2x1	3x1	-	-	06
	18	Body fluid and Circulation দেহতরল এবং সংবহন	1x1	1x1	-	3x1	-	5x1	10
	19	Excretory Product and their Elimination রেচন পদার্থ ও তাদের নিষ্কাশন	1x1	1x1	-	-	4x1	-	06
	20	Locomotion and Movement চলন এবং গমন	1x1	1x1	2x1	-	-	-	04
	21	Neural control and Co-ordination স্নায়বিক নিয়ন্ত্রণ ও সমন্বয়	1x1	-	2x1	-	4x1	-	07
	22	Chemical Co-ordination রাসায়নিক সমন্বয়	1x1	1x1	2x1	3x1	-	-	07
Total Marks			1x10 (10)	1x10 (10)	2x8 (16)	3x4 (12)	4x3 (12)	5x2 (10)	70
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SUB- BIOLOGY**

WEIGHTAGE TO TYPE OF QUESTIONS

Type of Questions	Marks (70)	Percentage
1. Multiple Choice Questions (MCQ) (1x10) (Inclusive of Assertion, Reason, Differentiation & Stem)	10	14.29
2. Very Short Answer Type Questions (VSA) (1x10) (Inclusive of Assertion, Reason, Differentiation & Stem)	10	14.29
3. Short Answer Type Questions- I (SA-I) (2x8) (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis & Create)	16	22.86
4. Short Answer Type Questions- II (SA-II) (3x4) (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis & Create)	12	17.14
5. Long Answer Type Questions - I (LA-I) (4x3) (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis & Create)	12	17.14
6. Long Answer Type Questions - II (LA-II) (5x2) (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis & Create)	10	14.29
	70	100

NOTE:-

i) Typology of questions:- MCQ, VSA, Assertion- Reasoning type questions; SA-I, SA-II, LA-I, LA-II, LA- III.

In LA- type questions source-based/ case- study based/ passage based questions may be included.

ii) Approximately 33 % internal choice would be given.