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.

BIOLOGY

REVISED SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE

One Paper (Theory) **Marks-70** **Time: 3 Hours**

Unitwise Distribution of Marks and Periods

GROUP-A: BOTANY	**Marks**	**Periods**
Unit-VI: Sexual Reproduction (Chapter-1)	05	17
Unit-VII: Genetics and Evolution (Chapter-6)	05	13
Unit-VIII: Biology in Human Welfare (Chapter-8)	04	10
Unit-IX: Biotechnology and its application(Chapter-9&10)	12	30
Unit-X: Ecology (Chapter-12&14)	09 (03 marks compulsory from chapter 14)	20
GROUP-B: ZOOLOGY		
Unit-VI: Reproduction (Chapter-2&3)	08	20
Unit-VII: Genetics and Evolution (Chapter-4&5)	12	35
Unit-VIII: Biology in Human Welfare(Chapter-7)	05	12
Unit-IX: Biotechnology and its application (Chapter-10: Only transgenic animals)	01	01
Unit-X: Ecology (Chapter-11,13&14)	09 (03 marks compulsory from chapter 14)	22
Total	**70**	**180**

Unitwise Distribution of Course contents :

Unit-VI : Reproduction :

Chapter 1 : **Sexual Reproduction in Flowering Plants** : (i) Flower-An organ of sexual reproduction of Angiosperms;
(ii) Pre-fertilization: Structures and Events; (iii) Double Fertilization; (iv) Post-fertilization: Structures and Events; (v) Apomisix and Polyembryony.

Chapter 2 : Human reproduction : (i) The Male Reproductive System; (ii) The Female Reproductive System; (iii) Gametogenesis; (iv) Menstrual Cycle; (v) Fertilization and Implantation; (vi) Pregnancy and Embryonic Development; (vii) Parturition and Lactation.

Chapter 3 : Reproductive Health : (i) Reproductive Health-Problems and Strategies; (ii) Population Stabilization and Birth Control; (iii) Medical Termination of Pregnancy; (iv) Sexually Transmitted infection; (v) Infertility and Assisted Reproductive Technology

Unit-VII : Genetics and Evolution

Chapter 4 : Principles of Inheritance and Variation : (i) Mendel's Laws of Inheritance; (ii) Inheritance of One Gene; (iii) Inheritance of Two Genes; Chromosomal Theory of Inheritance; Linkage and recombination (iv) Sex Determination; (v) Mutation; (vi) Genetic Disorders.

Chapter 5 : Molecular Basis of Inheritance : (i) The DNA; (ii) The Search for Genetic Material; (iii) RNAWorld; (iv) Replication; (v) Transcription; (vi) Genetic Code; (vii) Translation; (viii) Regulation of Gene Expression; (ix) Human Genome Project; (x) DNA Fingerprinting.

Chapter 6 : Evolution : (i) Origin of Life; (ii) Evolution of Life Formes- A Theory; (iii) Evidences for Evolution; (iv) Adaptive Radiation; (v) Biological Evolution; (vi) Mechanism of Evolution; (vii) Hardy-Weinberg Principle; (viii) A brief account of Evolution; (ix) Origin and Evolution of Man.

Unit-VIII : Biology in Human Welfare

Chapter 7 : Human Health and Diseases : (i) Common Diseases in Humans; Typhoid, Pneumonia, Common Cold, Malaria, Amaebiasis, Ascariasis, Elephantiasis, Ringworm (ii) Immunity; (iii) AIDS; (vi) Cancer; (v) Drugs and Alcohol Abuse.

Chapter 8: Microbes in Human Welfare : (i) Microbes in Household Products; (ii) Microbes in Industrial Products; (iii) Microbes in Sewage Treatment; (iv) Microbes in Production of Biogas; (v) Microbes as Biocontrol Agents; (vi) Microbes as Biofertilisers.

Unit-IX : Biotechnology

Chapter 9 : Biotechnology; Principles and Processes :
(i) Principles of Biotechnology; (ii) Tools of recombinant DNA Technology; (iii) Processes of Recombinant DNA Technology.

Chapter 10: Biotechnology and its Application :
(i) Biotechnological Applications in Agriculture;
(ii) Biotechnological Applications in Medicine;
(iii) Transgenic Animals; (iv) Ethical Issues.
(iv) Ethical issues

Unit-X : Ecology

Chapter 11 : Organisms and Populations : (i) Organism and its Environment; (ii) Populations- Population Attributes; Population Growth and Population Interactions.

Chapter 12 : Ecosystems : (i) Ecosystem- Structure and Function; (ii) Productivity; (iii) Decomposition; (v) Energy Flow; (v) Ecological Pyramids;

Chapter 13 : Biodiversity and Conservation : (i) Biodiversity; (ii) Biodiversity Conservation; (iii) National Park and Sanctuaries of Assam with special reference to conservation of endangered species.

Chapter 14 : Bioresources of Assam : (i) Medicinal (Sarpagandha, Neem, Tulsi, Cinchona and Atropa) Timber Yielding (Teak, Sal, Sissoo, Gomari, Hollong) Plants; (ii) Sericogenic Re-sources (Muga and Eri)

SYLLABUS FOR BOTANY PRACTICAL

Total: Marks-15

(Practical Performance: 12)

(Practical Record book: 03)

1. Study of the reproductive parts of different flowers.
2. Study of flowers adapted to pollination by different agencies (wind, insect).
3. Study of percentage of pollen germination on a slide.
4. To study pollen tube growth on the stigma.
5. To study fruits and seeds of any common fruit (e.g. legume) at different stages of development.
6. To study mitosis in onion root tips (preparation).
7. To study meiosis in onion buds (permanent slide)
8. Exercise on controlled pollination– emasculation, tagging and bagging.
9. To study the pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
10. Study plants found in dry conditions. Comment ‘on their adaptations/ ecosystems.
11. To study plants of aquatic conditions. Comment on their adaptations/ ecosystems.
12. Study of plant population density by quadrat method.
13. Study of plant population frequency by quadrat method.
14. To study analogous and homologous organs in various plants.
15. Preparation of a practical record book

SYLLABUS FOR ZOOLOGY PRACTICAL

Total: Marks-15

(Practical Performance: 12)

(Practical Record book: 03)

1. Study and identify stages of gamete development in T.S. of testis and T.S. of ovary of mammal.
2. Study of T.S. of blastula stage of mammal through permanent slide.
3. Study of Mendelian inheritance using seeds of different colours/ size of any plant.
4. Prepare pedigree charts for genetic traits such as rolling of tongue, haemophilia, and colourblindness.
5. To identify common 'disease causing organisms' like Ascaris, Entamoeba, Plasmodium, Microsporum. Comment on the symptoms of the disease that they cause.
6. Collect and study soil from different sites and study them for texture and moisture content.
7. Study of animals found in dry conditions. Comment on their adaptations.
8. Study of animals of aquatic conditions. Comment on their adaptations.
9. Collect water from different water bodies around you and study them for pH, clarity and presence of any living organisms.
10. Study the amount of suspended particulate matter in air at the two widely different sites.
11. To study analogous and homologous organs in various animals.
12. Preparation of a practical Record Book.

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