

Syllabus
Session 2020-21
Class XII
Biology

Orientation and Recapitulation: Discussion on importance of Biology, scope of Biology and other topics of interest.

Unit	Title	Marks
VI	Reproduction	14
VII	Genetics and Evolution	18
VIII	Biology and Human Welfare	14
IX	Biotechnology and its Applications	12
X	Ecology and Environment	12
	Total	70

Unit-VI
Reproduction

Chapter-2: Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation

Chapter-3: Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

Chapter-4: Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

Unit-VII
Genetics and Evolution

Chapter-5: Principles of Inheritance and Variation

Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in human being, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans -thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Chapter-6: Molecular Basis of Inheritance

Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

3. . Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.

Unit-VIII

Biology and Human Welfare
<p>Chapter-8: Human Health and Diseases Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.</p> <p>Chapter-10: Microbes in Human Welfare Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.</p> <p>3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.</p>
Unit-IX Biotechnology and its Applications
<p>Chapter-11: Biotechnology - Principles and Processes Genetic Engineering (Recombinant DNA Technology).</p> <p>Chapter-12: Biotechnology and its Application Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.</p>
Unit-X Ecology and Environment
<p>Chapter-13: Organisms and Populations Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.</p> <p>Chapter-15: Biodiversity and its Conservation Biodiversity - Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.</p>
Practicals
<p>A. List of Experiments</p> <ol style="list-style-type: none"> 1. Prepare a temporary mount to observe pollen germination. 2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them. 3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism. 4. Prepare a temporary mount of onion root tip to study mitosis. 5. Study the effect of different temperatures or three different pH on the activity of salivary amylase on starch. 6. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc. <p>B. Study/observation of the following (Spotting)</p> <ol style="list-style-type: none"> 1. Flowers adapted to pollination by different agencies (wind, insects, birds). 2. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice). 3. Meiosis in onion bud cell or grasshopper testis through permanent slides. 4. T.S. of blastula through permanent slides (Mammalian). 5. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.

6. Common disease causing organisms like *Ascaris*, *Entamoeba*, *Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images. Comment on symptoms of diseases that they cause.
7. Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.
8. Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

PROJECT: Submission of Project Report

Revision of all chapters and related practicals

REVISION AND BOARD'S PRACTICAL EXAMINATION BOARD'S EXAMINATION 2020-21

Questions typology

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20%

Note:

- Typology of questions: VSA including MCQs, Assertion – Reasoning type questions; SA; LAI; LA-II; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.

An internal choice of approximately 33% would be provided.

Suggestive verbs for various competencies:

Demonstrate Knowledge and Understanding

State, name, list, identify, define, suggest, describe, outline, summarize, etc.

Application of Knowledge/Concepts

Calculate, illustrate, show, adapt, explain, distinguish, etc.

Analyse, Evaluate and Create

Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.