

TERMWISE SYLLABUS	
SESSION-2018-19	
CLASS-XII	
SUBJECT: BIOLOGY	
MONTH	CONTENTS
April 2018 to September 2018	<b>Orientation and Recapitulation:</b> Discussion on importance of Biology, scope of Biology and other topics of interest.
	<b>Unit-VI Reproduction</b>
	<b>Chapter-1: Reproduction in Organisms</b>
	Reproduction, a characteristic feature of all organisms for continuation of species; modes of reproduction - asexual and sexual reproduction; asexual reproduction - Binary fission, Sporulation, budding, gemmule formation, Fragmentation; vegetative propagation in plants.
	<b>Chapter-2: Sexual Reproduction in Flowering Plants</b>
	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.
	<b>Chapter-3: Human Reproduction</b>
	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).
	<b>Practical 1:</b> Flowers adapted to pollination by different agencies (wind, insects, birds).
	<b>Practical 2:</b> Controlled pollination - emasculation, tagging and bagging.
	<b>Practical 3:</b> Study pollen germination on a slide.
	YUVA Session 12.10- Let not the Newborn Die
	<b>Chapter-4: Reproductive Health</b>
	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).
	<b>Practical 1:</b> Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
<b>Practical 2:</b> T.S. of blastula through permanent slides (Mammalian).	
Revision Test from Unit VI Reproduction	
<b>Project:</b> Investigatory Project (Any one on the Topic of interest) during summer vacations	
<b>SUMMER VACATIONS</b>	
<b>Chapter-5: Principles of Inheritance and Variation</b>	
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 humans, 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.	
<b>Chapter-6: Molecular Basis of Inheritance</b>	

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 and human and rice genome projects; DNA fingerprinting.

### **Chapter-7: Evolution**

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.

**Practical 1:** Mendelian inheritance using seeds of different colour/sizes of any plant.

**Practical 2:** 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.

**Practical 3:** Prepare a temporary mount of onion root tip to study mitosis.

**Practical 4:** Meiosis in onion bud cell or grasshopper testis through permanent slides.

Revision and Test from UNIT-VII(GENETICS AND EVOLUTION)

YUVA Session No.3.10- Every Drop is precious!

### **Chapter 8: Human Health and Diseases**

Pathogens; parasites causing human diseases (malaria, dengue, chickengunia, 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.

### **Chapter-9: Strategies for Enhancement in Food Production**

Improvement in food production: Plant breeding, tissue culture, single cell protein, Biofortification, Apiculture and Animal husbandry.

### **Chapter-10: Microbes in Human Welfare**

In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and biofertilizers. Antibiotics; production and judicious use.

**Practical 1:** Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.

2. Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.

Revision and Test from UNIT-VIII(Biology in Human Welfare)

YUVA Session 12.2 Shahrukh ka Funda

### **Unit-IX Biotechnology and Its Applications**

#### **Chapter-11: Biotechnology - Principles and processes**

Genetic Engineering (Recombinant DNA Technology).

#### **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, bio piracy and patents.

**Practical 1:** Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

Revision and Test from UNIT-IX(BIOTECHNOLOGY)

**MID TERM EXAMINATION 2018-19**

**SECOND TERM****Unit-X Ecology and Environment**October  
2018  
to  
February  
2019**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

**Chapter-14: Ecosystem**

Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy; nutrient cycles (carbon and phosphorous); ecological succession; ecological services - carbon fixation, pollination, seed dispersal, oxygen release (in brief).

**Chapter-15: Biodiversity and its Conservation**

Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, national parks, sanctuaries and Ramsar sites.

**Practicals 1:** 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.

**Practicals 2:** Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.

**Chapter-16: Environmental Issues**

Air pollution and its control; water pollution and its control; agrochemicals and their effects; solid waste management; radioactive waste management; greenhouse effect and climate change impact and mitigation; ozone layer depletion; deforestation; any one case study as success story addressing environmental issue(s).

**Revision and Test from UNIT-X Ecology(Chapter 13-16)**

**Practicals 1:** Study the presence of suspended particulate matter in air at two widely different sites.

**Practical 2:** Study the plant population density by quadrat method.

**Practical 3:** Study the plant population frequency by quadrat method.

**Practical 4:** Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.

**Practical 5:** Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

**PROJECT: Submission of Project Report****REVISION OF UNIT VI TO X AND RELATED PRACTICALS****Preparation for MOCK TEST****Common Pre- Board Examination****REVISION AND BOARD'S PRACTICAL EXAMINATION****BOARD'S EXAMINATION 2018-19**