

MONTHLY SYLLABUS

SESSION-2017-18

CLASS-XII

SUBJECT : BIOLOGY

MONTH	CONTENTS
April 2017	<p>Orientation and Recapitulation :- Discussion on importance of Biology, scope of Biology and other topics of interest.</p> <p>Chapter-1:Reproduction in Organisms: Reproduction, a characteristic feature of all organisms for continuation of species; modes of reproduction; Asexual and sexual reproduction; modes of asexual reproduction - binary fission, sporulation, budding, gemmule formation, fragmentation; regeneration; vegetative propagation in plants.</p> <p>Chapter- 2: Sexual Reproduction in Flowering Plants:</p> <p>Structure of flower, development of male and female gametophytes. Structure of pollen grain & ovule, Pollination, kinds of pollination, Agents of pollination and example, Out breeding devices: Pollen - pistil interaction; artificial hybridization; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; Significance of seed dispersal and fruit formation; special modes-apomixis, parthenocarpy, polyembryony; Significance of fruit formation and seed dispersal.</p> <p>Chapter-3: Human Reproduction: Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; Menstrual cycle; fertilisation; embryo development up to blastocyst formation; Implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation</p>

	<p>(elementary idea).</p> <p>Discussion on Value based questions.</p> <p>Practicals:-1. Flowers adapted to pollination by different agencies (wind, insects, birds).</p> <p>2. Study of controlled pollination - Emasculation, Bagging and Tagging.</p> <p>3. Study of pollen germination on a slide.</p> <p>YUVA Session 12.10-Let Not the Newborns Die</p>
May 2017	<p>Chapter- 4: Reproductive Health: Need for reproductive health and prevention of Sexually Transmitted Diseases (STD); 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).</p> <p>Discussion on Value based questions.</p> <p>PRACTICALS: Through permanent slides, Identification of stages of gamete development- i.e. T.S. of testis, T.S. of Ovary, (from grasshopper/mice), T.S. blastula (Mammalian).</p> <p>Revision and Test from Unit VI- Reproduction</p> <p>Project: Investigatory Project (Any one on the topic of interest) during summer vacations.</p>
SUMMER VACATIONS	
July 2017	<p>Chapter -5: Heredity and Variation: Mendelian inheritance; deviations from Mendelism - incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, <u>pleiotropy</u>; elementary idea of <u>polygenic inheritance</u>; chromosome theory of inheritance; chromosomes and genes; Sex determination - in humans, birds and <u>honey bee</u>; linkage</p>

	<p>and crossing over; sex linked inheritance - haemophilia, <u>colour blindness</u>; Mendelian disorder in humans – Thalassemia; chromosomal disorders in humans; Down’s syndrome, Turner’s and Klinefelter’s syndromes.</p> <p>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 and human and <u>rice genome projects</u>; DNA fingerprinting.</p> <p>Chapter-7. Evolution: Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, <u>embryology and molecular evidence</u>); Darwin’s contribution, <u>modern synthetic theory of evolution</u>; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, <u>types of natural selection</u>; Gene flow and genetic drift; Hardy-Weinberg’s principle; adaptive radiation; human evolution.</p> <p>Discussion on Value based questions.</p> <p>PRACTICALS: 1. Mendelian Inheritance using seeds of different colour/size of any plant.</p> <p>2. Study of prepared Pedigree charts of genetic traits such as - widow’ s peak, colour blindness, Rolling of tongue, ear lobes & blood groups.</p> <p>3. Prepare temporary mount of onion root tip to study mitosis.</p> <p>4. Study of meiosis in onion bud cells or grasshopper testis through permanent slides.</p> <p>Revision and Test from UNIT - VII (GENETICS AND EVOLUTION)</p> <p>YUVA Session No. 3.10 -Every Drop is precious!</p>
August 2017	Chapter - 8: Health and Disease: Pathogens; parasites causing

	<p>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.</p> <p>Chapter-9: Strategies for Enhancement in Food Production: Improvement in food production; Plant breeding, inbreeding, out breeding, tissue culture, single cell protein, Bio-fortification, Apiculture and Animal husbandry.</p> <p>Chapter-10: Microbes in Human Welfare: Microbes In household food processing, Microbes in Industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. <u>Antibiotics; production and judicious use.</u></p> <p>Discussion on Value based questions.</p> <p>PRACTICALS:- 1. Common disease causing organisms like Plasmodium, Ascaris, Entamoeba and Roundworm through permanent slides or specimens. Comment on symptoms of disease that they cause.</p> <p>2. Two plants & two animals (model /virtual images) found in xeric conditions. Comment upon their morphological adaptations.</p> <p>Revision and Test from UNIT - VIII (BIOLOGY IN HUMAN WELFARE)</p> <p>YUVA Session 12.2-Shahrukh ka Funda</p>
September 2017	<p>Chapter-11: Biotechnology: Principles & Processes: Principle, tools of recombinant DNA Technology - isolation of DNA, restriction enzyme, Polymerase enzyme, Ligase, cloning vector, PCR, Gel Electrophoresis, competent host, transformation methods, Bio-reactor, downstream processing.</p>

	<p>Chapter-12: Biotechnology and its Applications: Application of biotechnology in health and agriculture: human insulin and <u>vaccine production, stem cell technology</u> gene therapy; genetically modified organisms Bt crops, RNA interference; transgenic animals; bio-safety issues-bio-piracy and <u>patents</u>.</p> <p>Discussion on value based questions.</p> <p>PRACTICAL: Isolation of DNA from easily available plant material like spinach, pea, papaya etc.</p> <p>Revision and Test from UNIT - IX (BIOTECHNOLOGY)</p>
	First Term Examination- 2017-18
Second Term	OCTOBER-2017 to MARCH-2018
October 2017	<p>Chapter-13 : Organisms and Populations: Organisms and environment: Habitat and <u>niche</u>, population and ecological adaptations; Population attributes - growth, birth rate and death rate, age distribution; population interactions - mutualism, competition, predation, parasitism.</p> <p>Chapter-14: 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, <u>oxygen release</u> (in brief).</p> <p>Chapter-15: Biodiversity and its conservation: Concept of biodiversity; patterns of biodiversity; importance of biodiversity; loss of biodiversity; Biodiversity conservation; hotspots, endangered organisms; extinction, <u>Red Data Book</u>, biosphere reserves, national parks, sanctuaries, <u>Ramsar sites</u>,</p> <p>Discussion on value based questions.</p> <p>PRACTICALS:- 1. Collect soil from at least two different sites & study them for texture, moisture content , pH & water holding</p>

	<p>capacity. Correlate with the kinds of plants found in them.</p> <p>2. Collect water from two different water bodies around you and study them for pH, clarity & presence of any living organisms.</p>
November 2017	<p>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 <u>climate change</u>; ozone layer depletion; deforestation; any one case study as success story addressing environmental issue(s).</p> <p>Discussion on value based questions.</p> <p>Revision and Test from UNIT - X (ECOLOGY) (CHAPTERS 13 TO 16)</p> <p>PRACTICALS:- 1. Study the presence of suspended particulate matter in air at two widely different sites.</p> <p>2. Study of plant population density by quadrat method.</p> <p>3. Study of plant population frequency by quadrat method.</p> <p>4. Study the effect of different temperatures and pH on the activity of salivary amylase on starch.</p> <p>5. Study of two plants and two animals (models/virtual images) found in aquatic conditions comment upon their morphological adaptations.</p> <p>PROJECT: Submission of Project Report.</p>
December 2017	<p>REVISION OF UNIT VI AND RELATED PRACTICALS</p> <p>REVISION OF UNIT VII AND RELATED PRACTICALS</p> <p>REVISION OF UNIT VIII AND RELATED PRACTICALS</p> <p>REVISION OF UNIT IX AND RELATED PRACTICALS</p> <p>REVISION OF UNIT X AND RELATED PRACTICALS</p> <p>Preparation for MOCK TEST</p>

January 2018	Remedial Classes during Winter Break
January 2018	COMMON PRE-BOARD EXAMINATION
February 2018	Revision and BOARD'S PRACTICAL EXAMINATION
March 2018	BOARD'S EXAMINATION – 2017-18