

MONTHLY SYLLABUS

SESSION-2016-17

CLASS-XII

SUBJECT : BIOLOGY

MONTH	CONTENTS
01.04.2016 to 08.04.2016	Orientation and Recapitulation :- Discussion on importance of Biology, scope of Biology and other topics of interest.
11.04.2016 to 30.04.2016	<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; 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, 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.</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 (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, Tagging and Bagging.</p> <p>3. Study of pollen germination temporary & permanent slide.</p> <p>YUVA Session 12.10-Let Not the Newborns Die</p>
02.05.2016 to 10.05.2016	<p>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).</p> <p>Discussion on Value based questions.</p> <p>PRACTICALS: 1. Through permanent slides, Identification of stages of gamete development-T.S. of testis, T.S. of Ovary, T.S. of Blastula.</p> <p>2. To prepare a temporary mount of onion root tip to study mitosis.</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>
11.05.2016 onwards	SUMMER VACATIONS
01.07.2016 to 30.07.2016	<p>Chapter -5: 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;</p>

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 disorder 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 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 evidence); 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.

Discussion on Value based questions.

PRACTICALS: 1. Mendelian Inheritance using seeds of different colour/size of any plant.

2. Study of prepared Pedigree charts of genetic traits such as - widow's peak, colour blindness, Rolling of tongue, ear lobes & blood groups.

3. Prepare temporary mount of onion root tip to study mitosis.

4. Study of meiosis in onion bud cells or grasshopper testis through permanent slides.

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

YUVA Session No. 3.10 -Every Drop is precious!

<p>01.08.2016 to 31.08.2016</p>	<p>Chapter - 8: Health and Disease: 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.</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. Antibiotics; production and judicious use.</p> <p>Discussion on Value based questions.</p> <p>PRACTICALS:- 1. Identification of disease causing organisms Plasmodium, Ascaris, Entamoeba, Plasmodium, 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>
<p>01.09.2016 to 30.09.2016</p>	<p>Chapter-11: Biotechnology: Principles & Processes: Principle, tools of recombinant DNA Technology - restriction enzyme, Polymerase enzyme, Ligase, cloning vector, competent host, transformation methods, Gel Electrophoresis, PCR,</p>

	<p>isolation of DNA, Bio-reactor, downstream processing.</p> <p>Chapter-12: Biotechnology and its Applications: Application of biotechnology in health and agriculture: human insulin and vaccine production, stem cell technology gene therapy; genetically modified organisms-Bt crops, RNA interference; transgenic animals; bio-safety issues-bio-piracy and patents.</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>
	<p>First Term Examination- 2016-17</p>
01.10.2016 to 31.10.2016	<p>Chapter-13 : Organisms and Populations: Organisms and environment: Habitat and niche, 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, oxygen release (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, Red Data Book, biosphere reserves, national parks, sanctuaries, Ramsar sites,</p> <p>Discussion on value based questions.</p> <p>PRACTICALS:- 1. Collect & study, soil from at least two different sites& study them for, pH & water holding capacity of</p>

	<p>soil.</p> <p>2. Collect & study soil from at least two different sites & study them for texture, moisture content.</p> <p>3. Collect water from two different water bodies around you and study them for pH, clarity & presence of any living organisms.</p>
01.11.2016 to 30.11.2016	<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 climate change; global warming; 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)</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>
01.12.2016 to 31.12.2016	<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>

01.01.2017 to 15.01.2017	WINTER BREAK (Remedial Classes)
16.01.2017 to 31.01.2017	Revision and COMMON PRE-BOARD EXAMINATION
01.02.2017 to 28.02.2017	Revision and BOARD'S PRACTICAL EXAMINATION
01.03.2017 onwards	BOARD'S EXAMINATION - 2017

Prepared by :

1. Mr. V.S. Malik, Lecturer (Biology), RPVV Civil Lines, Delhi-54.
2. Mr. Ranveer Singh, Lecturer (Biology), SBV Timarpur, Delhi-54