

ARMY PUBLIC SCHOOL, GOPALPUR

SPLIT - UP OF SYLLABUS [2020-2021]

CLASS – XII: BIOLOGY

THEORY

UNIT	TITLE	MARKS	NO. OF PERIODS
VI	Reproduction	14	30
VII	Genetics and Evolution	18	40
VIII	Biology and human welfare	14	30
IX	Biotechnology and application	10	30
X	Ecology and environment	14	30
	TOTAL	70	160

PRACTICAL

SL. NO.	EVALUATION SCHEME		MARKS
1.	One Major Experiment		5 Marks
2.	One Minor Experiment		4 marks
3.	Slide Preparation		5 marks
4.	Spotting		7 marks
5.	Practical Record + Viva Voce	Credit to the students work over the academic session may be given.	4 marks
6.	Project Record + Viva Voce		5 marks
	Total		30 marks

SL.NO	WORKING DAYS & MONTH	CHAPTER NO.	DETAILED SPLIT UP SYLLABUS	PERIOD FOR TEACHING
1.	April & May (22+8)	Reproduction (Unit-VI) Chapter 1,2,3,4	<p>Chapter-1: Reproduction in Organisms 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.</p> <p>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.</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 upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).</p> <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>PRACTICAL- A.1& B.2 Study of pollen germination on a slide and stigma. A.9 Isolation of DNA from available plant material B.3 Study and identify stages of gametic development i.e T.S. of Testis and T.S. of ovary from permanent slides. B.1 Study of flowers adapted to pollination by different agencies B5. Study of T.S. of Blastula through permanent slide</p>	30

2.	June & July (10+26)	Genetics and Evolution (Unit-VII) Chapter – 5, 6, 7	<p>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 humans, birds and honey bee; linkage and crossing over; sex linked inheritance – hemophilia, colour blindness; Mendelian disorders 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 rice genome projects; DNA fingerprinting.</p> <p>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.</p> <p>PRACTICAL: B4. Study of meiosis from prepared slides B.6. Mendelian inheritance using seeds of different colours / sizes. B7. Study of pedigree from prepared charts</p>	40
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3.	August (23)	Biology and Human welfare (Unit-VIII) Chapter – 8, 9, 10	<p>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.</p> <p>Chapter-9: Strategies for Enhancement in Food Production <u>Improvement in food production:</u> Plant breeding, tissue culture, single cell protein, Bio fortification, Apiculture and Animal husbandry.</p> <p>Chapter-10: Microbes in Human Welfare In household food processing, industrial production, sewage treatment, energy generation and microbes as biocontrol agents and bio fertilizers. Antibiotics; production and judicious use</p> <p>PRACTICAL- B8. Exercise on controlled pollination-emasculation, tagging etc. B9. To identify common disease causing organisms. A8. Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch</p>	30
4.	September (23)	Biotechnology (Unit-IX) Chapter- 11, 12	<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, bio piracy and patent.</p> <p>PRACTICAL- B10 &11. Study and comment on Xerophytic and aquatic plants and animals A3. Study of pH, clarity and presence of any living organism in water sample A7. Prepare a temporary mount of onion root tip to study mitosis.</p>	30

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5.	September & October	Ecology (Unit-X) Chapter-13-16	<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-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).</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 and Ramsar sites.</p> <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; ozone layer depletion; deforestation; any one case study as success story addressing environmental issues.</p> <p>PRACTICAL- A2. Collect and study soil, texture, moisture etc. Study pH and water holding capacity of different soil samples A4. Study presence of suspended particulate matter in air A5&6. Population density and population frequency by quadrant method.</p>	30