

KOTHARI INTERNATIONAL SCHOOL

GRADE - 12 ANNUAL ACADEMIC PLAN

SUBJECT: BIOLOGY SESSION: 2022-23

NAME OF THE TEACHER SUMATI MISHRA

REPRODUCTION- 14 MARKS

GENETICS AND EVOLUTION- 18 MARK

BIOLOGY AND HUMAN WELFARE- 14 MARKS

BIOTECHNOLOGY – 10 MARKS

ECOLOGY AND ENVIRONMENT-14 MARKS

THEORY – 70 MARKS– PRACTICAL 30 MARKS

MONTH	TOPIC	CONTENT(SUB-TOPICS)
MARCH (9 DAYS)	SEXUAL REPRODUCTION IN FLOWERING PLANTS	<ul style="list-style-type: none">• 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• formation of fruit; special modes- apomixis, parthenocarpy, polyembryony• Significance of seed dispersal and fruit formation.
APRIL (18 DAYS)	HUMAN REPRODUCTION	<ul style="list-style-type: none">• Male and female reproductive systems; microscopic anatomy of testis and ovary• gametogenesis - spermatogenesis and oogenesis; menstrual

	REPRODUCTIVE HEALTH	<p>cycle; fertilisation, embryo development upto blastocyst formation</p> <ul style="list-style-type: none"> • implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea). • Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs) • birth control - need and methods; medical termination of pregnancy (MTP) • amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT, AI (brief overview).
MAY (13 DAYS)	PRINCIPLES OF INHERITANCE AND VARIATION	<ul style="list-style-type: none"> • Heredity and variation, Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance • multiple alleles and inheritance of blood groups
APRIL-MAY UNIT TEST – 1 (COMMENCING 29 APRIL & ENDING 20 MAY 2022)	PRINCIPLES OF INHERITANCE AND VARIATION	<ul style="list-style-type: none"> • pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; linkage and crossing over; Sex determination - in human being, birds, grasshopper and honey bee • Mutation, Pedigree analysis, sex linked inheritance - haemophilia, colour blindness • Mendelian disorders in humans –sickle cell anaemia,

		<p>Phenylketonuria, thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndrome</p> <p>Syllabus for Unit Test 1. Sexual Reproduction in flowering plants 2. Human Reproduction</p>
<p>JUNE</p> <p>SUMMER VACATION</p>	-	-
<p>JULY (20 DAYS)</p>	<p>MOLECULAR BASIS OF INHERITANCE</p>	<ul style="list-style-type: none"> • Structure of DNA and RNA; DNA packaging Search for genetic material and DNA as genetic material • DNA replication; Central Dogma; transcription, genetic code • Translation • gene expression and regulation - lac operon • Human genome project; DNA fingerprinting.
<p>AUGUST (19 DAYS)</p> <p>UNIT TEST 2</p>	<p>EVOLUTION</p>	<ul style="list-style-type: none"> • Origin of life; biological evolution and evidences for biological evolution (paleontology comparative anatomy, embryology and molecular evidences) • adaptive radiation; Biological evolution: Lamarck's theory of use and disuse of organs • Darwin's 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

	MICROBES IN HUMAN WELFARE	<p>principle; brief account of evolution; human evolution.</p> <ul style="list-style-type: none"> • Microbes in food processing, industrial production • Antibiotics; production and judicious use • sewage treatment energy generation and control microbes as bio-control agents • bio-fertilizers.
<p>SEPTEMBER (22 DAYS)</p> <p>HALF YEARLY EXAMINATION COMMENCES 16 SEPTEMBER & ENDS 28 SEPTEMBER 2022</p>	<p>REVISION HALF YEARLY EXAMINATION</p>	<p>SYLLABUS FOR HALF YEARLY EXAMINATION IS 75%</p>
<p>OCTOBER (13 DAYS)</p>	<p>BIOTECHNOLOGY - PRINCIPLES AND PROCESSES</p>	<ul style="list-style-type: none"> • Genetic Engineering Recombinant DNA Technology. • Plasmid vector • Polymerase chain Reaction (PCR) • DNA Fingerprinting
<p>NOVEMBER (21 DAYS)</p> <p>COMPLETION OF PROJECT</p> <p>PRE-BOARD EXAMINATION-1 COMMENCES ON 18</p>	<p>BIOTECHNOLOGY AND ITS APPLICATION</p>	<ul style="list-style-type: none"> • Application of biotechnology in health and agriculture • genetically modified organisms - Bt crops • RNA interference • Human insulin • gene therapy molecular diagnosis transgenic animals • biosafety issues biopiracy and patents.

<p>NOVEMBER AND ENDS ON 30 NOVEMBER</p>	<p>ORGANISMS AND POPULATIONS</p>	<ul style="list-style-type: none"> • Organisms and environment: Habitat and niche • abiotic factors, ecological adaptations • population interactions - mutualism, competition predation, parasitism, commensalism • population attributes - growth, birth rate and death rate, age distribution <p>SYLLABUS FOR PRE-BOARD EXAMINATION- 1 IS 85%</p>
<p>DECEMBER (21 DAYS)</p> <p>PRE-BOARD EXAMINATION- 2 COMMENCES ON16 DECEMBER AND ENDS ON 30 DECEMBER</p>	<p>ECOSYSTEM</p> <p>BIODIVERSITY</p>	<p>Ecosystem:</p> <ul style="list-style-type: none"> • structure and function; 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 <p>Biodiversity –</p> <ul style="list-style-type: none"> • Concept, levels patterns, importance; loss of biodiversity; biodiversity conservation; hotspots • endangered organisms, extinction • Red Data Book • Sacred Groves biosphere reserves

		<ul style="list-style-type: none"> national parks wildlife, sanctuaries and Ramsar sites. <p>SYLLABUS FOR PRE-BOARD EXAMINATION- 2 IS 100%</p>
JANUARY (15 DAYS)	PRACTICE TESTS BOARD PRACTICALS COMMENCE	
FEBRUARY (20 DAYS)	BOARD PRACTICALS	
AWAIT CBSE ANNOUNCEMENT OF BOARD EXAMINATION DATES		

*****PRACTICAL / PROJECT WORK WILL RUN SIMULTANEOUSLY WITH ACADEMIC TRANSACTION.**