

6 <sup>TH</sup> YEAR		<b>BIOLOGY WORK SCHEDULE</b>	<b>2009/10</b>
TOPIC	TIME/DATES	SKILLS - develop knowledge of :-	ASSESSMENT
<b>REPRODUCTION</b> Sexual reproduction flowering plant	Aug/Sept -2weeks	Differences between asexual and sexual reproduction Flower structure Wind pollinated flowers/ insect pollinated flowers Pollen grain development Embryo sac development Pollination - self and cross Fertilisation (double fertilisation) Seed structure Monocotyledon seeds, dicotyledon seeds Endospermous seeds/ non-endospermous seeds Fruit formation Fruit and seed dispersal/ seedless fruits Dormancy in seeds Germination - definition / factors necessary Epigeal / hypogeal germination  Asexual reproduction - vegetative propagation Potato tuber, carrot tap root, onion bulb, Comparison of reproduction by seed with vegetative propagation Artificial propagation in flowering plants Horticultural methods of artificially propagating plants - eg cuttings, layering, grafting, tissue culture	TEST - Sept  Homework - write up germination practical  Exam questions - 1) germination graphs - dry weight/ wet weight  2) endosperm carbohyd vs cotyledon carbohyd
<b>HUMAN REPRODUCTION</b>	Sept - 2 weeks	<b>Sexual reproduction in humans</b> Gametes Human male reproductive system - structures and functions Human female reproductive system - structures and functions Definition of secondary sexual characteristics - role of testosterone and oestrogen One cause of male infertility and corrective measures One cause of female infertility and corrective measures Female menstrual cycle (incl role of oestrogen and progesterone) Menstrual disorders Copulation/ fertilisation /implantation Survival times for sperm and ova - fertile period Placenta formation and functions Development of embryo to end of third month Birth, lactation (incl hormonal control) Methods of contraception In vitro fertilisation Benefits of breastfeeding <b>VIDEO - Development of embryo → birth</b>	<b>TEST Sept (end)</b>  Homeworks - learning diagrams Learning topic for test  Exam questions from papers on human reproduction
<b>MITOSIS</b> <b>MEOISIS</b> Cell cycles	October First 2 weeks	<b>(Mitosis and Meiosis)Cell Continuity</b> <b>Cell Cycle</b> <b>1. Interphase</b> <b>2. Division of the Nucleus</b> <b>3. Cytokinesis</b> <b>Mitosis:</b> Role of MitosisStages of Mitosis→Prophase, Metaphase, Anaphase, Telophase. <b>Definitions:</b> Chromatin: Chromosomes: Chromatid: <b>Centromere:</b>	<b>TEST</b> on stages of mitosis

		<p><b>Meiosis</b> □ <b>Role of Meiosis</b> → <b>Site of Meiosis</b>  <b>Cancer</b> □ <b>Causes of Cancer (any two)</b></p>	
DNA & RNA	OCT 7 <sup>th</sup> - 14 <sup>th</sup>	<p><b>DNA - Structure, Replication, Profiling and Screening</b>  <b>DNA Structure, DNA Replication, DNA Profiling, Applications of DNA Profiling, DNA (Genetic) Screening, RNA --&gt; Differences between DNA and RNA</b>  <b>Mandatory Activity --&gt; Isolation of DNA from Plant Tissue</b></p>	Practical write up
PROTEIN SYNTHESIS & GENETIC ENGINEERING	OCT 14 <sup>th</sup> - 21 <sup>st</sup>	<p><b>Protein Synthesis and Genetic Engineering</b></p> <p><b>Gene, protein Synthesis, Genetic Code</b>  <b>Process of Protein Synthesis – transcription and translation</b>  Transcription – DNA base sequence to mRNA base sequence, Translation – mRNA base sequence to amino acid sequence. Ribosomal RNA (rRNA), Transfer RNA (tRNA),  <b>Genetic Engineering --&gt; Applications of Genetic Engineering</b>  <b>Gene Cloning--&gt; Human Insulin - an example of genetic engineering.</b></p> <p><b>Isolation, Cutting , Transformation - uptake of foreign DNA by cells, Expression</b></p>	Test on DNA, RNA, protein synthesis, extraction of DNA & genetic profiling
GENETICS & INHERITANCE  GENETICS PROBLEMS	OCT 21 <sup>st</sup> - NOV 13 <sup>th</sup>	<p>Genetics Definitions: Genetics: Chromosome: Diploid: Haploid: Homologous Chromosomes: Gene: Allele: Locus: Dominance: Recessive: Genotype: Phenotype: Homozygous: Heterozygous: Heterozygous Dominant: Incomplete Dominance: Sex Chromosomes (heterosomes): Autosomes: Sex-linked Genes or Sex linkage:.</p> <p>Linkage or Gene linkage: Mutation: Mendel's First Law: The Law of Segregation, Mendel's Second Law: Law of Independent Assortment (The Law of 'Free Mixing') Genetic Variation <b>Meiosis</b>  Crossing-over generated even more variation. Mutation, gene mutations, Chromosome mutation, environmental factors e.g. UV light, nuclear radiation, X-rays, Non-nuclear Inheritance</p> <p>Genetics Crosses --&gt; Monohybrid: the inheritance of one characteristic, Dihybrid: <b>Mendelian Characteristics</b></p>	Homeworks - genetics problems  Test on genetics
EVOLUTION	NOV 13 <sup>th</sup> - 25 <sup>th</sup>	<p><b>Evolution--&gt;Evolution by Natural Selection</b> - theory put forward by Alfred Russell Wallace and Charles Darwin.  <b>Evidence for Evolution --&gt;Comparative Anatomy , Comparative embryology, Palaeontology, Structures-homologous. The pentadactyl limb: bat wing for flying whale fin for swimming, horse leg for running, human arm for grasping, The examples above indicate that they descended from a common ancestor. Textbook Diagram: human skeleton - to study the bone sequence in the human arm.</b></p>	Exam Questions
CLASSIFICATION	Nov 25 <sup>th</sup> - Dec 1 <sup>st</sup>	<p>Classification - The Five Kingdom System  <b>The Five Kingdoms --&gt; Monera (Prokaryotae), Protista (Protoctista), Fungi, Plantae, Animalia</b></p>	test
BACTERIA	DEC 1 <sup>st</sup> - 9 <sup>th</sup>	<p>Bacteria -Classification: unicellular prokaryotes of the Kingdom Monera., Distribution:., Textbook Diagram: the three major shapes of bacterial cells – spherical, rod, spiral.  Structure of Bacterium Cell- Size: Cell Wall: non-cellulose, Capsule Flagellum: locomotion., Genetic Material: single circular DNA Plasmid: small circular DNA  Reproduction Method: asexual by binary fission.-Speed: 20 minutes –. Favourable mutations -Bacterial populations can evolve very rapidly in response to changes in environmental conditions.</p>	EXAM Q  TEST

FUNGI	DEC 16 <sup>th</sup> - DEC 21 <sup>st</sup>	<p>Endospores  Nutrition -Autotrophic:Photosynthetic: Chemosynthetic:  Heterotrophic: not able to make their own food from inorganic materials. Saprophytic: Parasitic:  Mutualistic:Growth Factors-Temperature: Oxygen Concentration-  Aerobes: Anaerobes: Obligate Anaerobes Aerotolerant Anaerobes,  pH: affects the rate of enzyme action; <b>Growth Curves, Batch Processing -five stages</b> -Lag Phase: Log Phase: Stationary Phase: Decline Phase:Death or Survival: <b>Continuous Flow Processing</b>  -Beneficial Bacteria (any two), Harmful Bacteria (any two), <b>A pathogen, Pathogenic bacteria ,Antibiotics</b> , Abuse of Antibiotics in Medicine , Acquired Resistance to Antibiotics</p> <p><b>Fungi</b></p> <p>Characteristics, Distribution,<b>Nutrition</b>, Saprophytic: feed on dead organic matter e.g. Rhizopus ,arasitic: live with and feed off another living organism causing it harm, e.g., potato blight fungus  <b>Rhizopus -Vegetative Structure- Textbook Diagram: vegetative structure.Mode of Nutrition. Reproduction and Life Cycle.</b>  -Asexual Reproduction, Sexual Reproduction  <b>Yeast – a unicellular fungus ReproductionTextbook Diagram: budding of yeast.</b></p> <p><b>Economic Importance of Fungi -Beneficial , Harmful, Edible and Poisonous Fungi</b>  <b>Mandatory Activity - Investigate the Growth of Leaf Yeast</b>  <b>Precautions -Laboratory Procedures When Handling Micro-organisms, Sterility, Asepsis:</b></p>	
2 <sup>ND</sup> TERM	JAN - MARCH	<u>viruses</u> <u>Excretion, Osmoregulation and Homeostasis</u> <u>Skeleton - Bone arrangement and structure, joints,</u> <u>skeletal muscles</u> <u>Nervous System , Sense Organs - eye, ear, skin, nose,</u> <u>tongue</u> <u>Endocrine System</u> <u>Defence System - General and Specific</u>	WEEKLY TESTS ON 5 <sup>TH</sup> YEAR TOPICS  And topic tests for this term' s work
3 <sup>rd</sup> TERM	APRIL-MAY	Complete unfinished topics Revision Exam question - practise	Past exam questions