

BIOLOGY EOC REVIEW

Concept/Question	Notes
How does energy flow in the ecosystem?	
How do cells maintain homeostasis of pH, salinity, temperature, etc?	
Bonds- What are bonds? What are the different types of bonds? What are the bonding patterns of H, O, C, and N?	
1) Compare and contrast 4 main types of organic chemicals, listing functions and subunits <ul style="list-style-type: none">• Proteins• Carbohydrates• Lipids• Nucleic Acids	
Contrast inorganics such as H ₂ O, O ₂ , CO ₂ , and NH ₃ with organics	
Structure and function of: nucleus, plasma membrane, cell wall, mitochondria, vacuoles, chloroplasts, and ribosomes	

Proficient use and understanding of light microscopes.	
Compare/contrast prokaryote and eukaryote cells	
<p>1) Assess and explain importance of water to cells.</p> <p>2) Discuss active vs. passive transport, diffusion, osmosis, and semipermeable membranes.</p> <p>3) Given solution concentrations and different types of cells, students should be able to predict any changes that may or may not occur.</p>	
<p>What are enzymes?</p> <p>What are enzymes used for?</p>	
How can you determine the reactants and products by looking at a chemical reaction?	
<p>What is ATP?</p> <p>What is ATP used for?</p> <p>How is ATP formed?</p>	
What is the structure of DNA?	
How do the bases of DNA pair?	
What holds the base pairs together?	
What can occur if the DNA is not copied correctly in replication?	

Who has helped lead to the understanding of DNA?	
What is Transcription?	
What is Translation?	
What is the CELL CYCLE?	
What is MITOSIS?	
What is MEIOSIS?	
<p>Genetics:</p> <ul style="list-style-type: none">• Monohybrid and dihybrid crosses• Test crosses• Punnett squares• Dominant, recessive and codominant alleles• Multiple alleles as in A,B,AB & O blood types• Sex linked (X and Y) traits• Pedigrees-(with and without identification of the heterozygous condition)• Polygenic traits	
What are Mendel's Laws?	

<p>What are the uses of Biotechnology?</p> <ul style="list-style-type: none"> • Identification of individuals • Identification of parentage • Crime scene applications • Screening for genetic disorders including use of amniocentesis • Gene therapy • Pharmaceutical applications such as the production of insulin • Transgenic organisms (plants, animals, & bacteria) • Cloning • Gel Electrophoresis 	
<ol style="list-style-type: none"> 1) Describe genetic conditions such as sickle cell, colorblindness, cystic fibrosis, hemophilia, Down syndrome (trisomy 21), and Huntington's disease. 2) Describe conditions with genetic and environmental components such as; cardiovascular disease, diabetes, cancer, and asthma. 3) Describe conditions with primarily environmental causes such as malnutrition and lead poisoning. 4) Identification of environmental risk factors such as radiation and tobacco smoke. 	
<p>Early thoughts about beginning of life:</p> <ol style="list-style-type: none"> 1) Biogenesis in contrast to abiogenesis. 2) The contributions of Pasteur. 3) Early atmosphere hypotheses and experiments. 	

<p>Evidence of Evolution:</p> <ul style="list-style-type: none"> • Fossil record. • Adaptive radiation. • Vestigial structures. • Biochemical similarities. 	
<p>Development of New Species:</p> <ol style="list-style-type: none"> 1) Variation providing material for natural selection. 2) The roles of variation, reproductive and geographic isolation in speciation. 	
<p>Theory of Evolution:</p> <ul style="list-style-type: none"> • Current applications of theory (pesticides and antibiotics) 	
<p>Evolutionary Relationships:</p> <ul style="list-style-type: none"> • DNA analysis • Biochemical analysis • Better observation of embryological development 	
<p>Kingdoms of Life:</p> <ol style="list-style-type: none"> 1) Distinguishing characteristics of <ul style="list-style-type: none"> ❖ Animals <ul style="list-style-type: none"> • Chordata • Arthropoda • Annelida • Mollusca • Porifera • Cnidaria 	

<ul style="list-style-type: none"> ❖ Plants <ul style="list-style-type: none"> • Mosses • Ferns • Gymnosperms • Angiosperms ❖ Fungi ❖ Understanding of the shifting definition of Protists. ❖ Overall characteristics of Monera. 	
<p>Compare and contrast viruses to living organisms.</p>	
<p>Examine the binomial naming system</p>	
<p>Contribution of Carolus Linnaeus.</p>	
<p>1) Animal systems to include:</p> <ul style="list-style-type: none"> • Body covering • Cardiovascular • Digestive • Endocrine • Excretory • Immune • Muscular • Nervous • Reproductive • Respiratory • Support 	
<p>Students should be able to assess the roles of:</p> <ul style="list-style-type: none"> • Genetics • Nutrition • Other environmental factors <p>in the growth and development of plants and animals (including zygote, embryo, fetus, and seed).</p>	

<p>Ecosystems:</p> <p>1) Including:</p> <ul style="list-style-type: none"> • Abiotic Factors • Biotic Factors <p>2) Niche</p> <p>3) Predator / Prey relationship</p> <p>4) Limiting factors</p> <p>5) Carrying capacity</p>	
<p>1) Importance to Ecosystems:</p> <ul style="list-style-type: none"> • Photosynthesis • Decomposers • Trophic levels • Food chains • Direction of energy transfer • Efficiency of energy transfer 	
<p>What is the Water Cycle?</p>	
<p>What is the Carbon Cycle?</p>	
<p>What is the Nitrogen Cycle?</p>	
<p>What are some of the possible causes of global warming?</p>	
<p>Population growth:</p> <p>1) Factors influencing birth rates and death rates</p> <p>2) Effects of population size, density and resource use on the environment.</p>	

<p>Pesticide Use:</p> <ol style="list-style-type: none"> 1) Bioaccumulation of some pesticides resulting in unintended effects. 2) Effects of some pesticides on non-target populations. 3) Resistance to pesticides as an adaptation of some species. 4) Pros and cons of biocontrols as alternatives to pesticides. 	
<p>Adaptations for Survival:</p> <ul style="list-style-type: none"> • Mimicry • Protective coloration • Parental Behavior • Feeding Strategies • Behavioral responses to environmental changes. 	
<p>Adaptations of Organisms:</p> <ul style="list-style-type: none"> • Reflexes • Imprinting • Instincts • Types of learned behavior 	
<p>Adaptations of Animals:</p> <ul style="list-style-type: none"> • Circadian rhythms • Migration • Estivation • Hibernation • Adaptive value of biological clocks 	