

Ap biology midterm study guide

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AP Biology Midterm Study Guide Ecology, Biochemistry, Cells, Genetics, and Evolution Midterm Date: Part I: Multiple Choice Questions (60) VOCAB TO

KNOW: Element Diffusion Homozygous Lytic Cycle Compound Isotonic

Heterozygous Lysogenic Cycle Neutrons Hypertonic Phenotype

Transformation Protons Hypotonic Genotype Transduction Electrons Osmosis

Codominance Conjugation Atomic Number Turgid Wild type Plasmid Mass

Number Flaccid Mutant Evolution Isotope Endocytosis Sex-linked Taxonomy

Covalent Bond Exocytosis Nondisjunction Gradualism Ionic Bond

Phagocytosis Trisomy Homologous Hydrogen Bond ATP synthase Monosomy

Species Polar Chemiosmosis Ligase Speciation Hydrophilic Fermentation

Helicase Adaptive Radiation Hydrophobic Somatic Cells Transcription

Punctuated Equilibrium Acid Gametes mRNA splicing Autotroph/ Heterotroph

Base Interphase Translation Biome Polymer Mitosis Codons Kinesis Monomer

Cytokinesis Promoter Taxis Denaturation Zygote Introns Carrying Capacity

Endergonic Haploid Exons Parasitism Exergonic Diploid Anticodons

Commensalism Feedback Inhibition Meiosis Mutation Mutualism 1. Given the

atomic number of an element, be able to determine the number of neutrons

in two different isotopes. 2. Given the atomic number and mass number, be

able to draw the electron configuration of an element. 3. Know which part of

a water molecule is slightly positive, and which part is slightly negative. 4.

Given the chemical formula, be able to determine if a compound is an acid or

a base. 5. Know the structure of the various functional groups. 6. Know the

names of the monomers and polymers for each of the four major groups of

organic compounds. 7. Be familiar with the structure of DNA. 8. Know and be

able to recognize the levels of protein structure (from primary structure to

quaternary structure). 9. Be familiar with the characteristics of enzymes and know how they are utilized in chemical reactions. 10. Be able to describe the steps that occur as genetic information is transcribed and translated to form a protein. 11. Know the differences between a prokaryotic and a eukaryotic cell. 12. Be able to describe the structures found in a prokaryotic cell. 13. Know the functions of the various cell organelles. 14. Know the major structural components of the cell membrane. 15. Be able to determine which kinds of molecules pass through the cell membrane most easily. 16. Given the concentration of solute found inside and outside the cell, be able to determine whether water will enter or leave the cell. 17. Be familiar with the following processes, relating to cellular respiration — glycolysis, the citric acid cycle, electron transport, oxidative phosphorylation, and chemiosmosis. 18. Know the primary role of oxygen in cellular respiration. 19. Know how and why a proton gradient is established during aerobic cellular respiration. 20. Know the products of the light reactions of photosynthesis, and know which products are utilized in the Calvin cycle. 21. Be able to describe the relationship between photosynthesis and cellular respiration. 22. Know which substances are required in the Calvin cycle. 23. Be able to describe what occurs in each step of Mitosis. 24. Given the number of chromosomes in an animal's liver cells, be able to determine the number of chromosomes that would be found in its sex cells. 25. Know the number and type of cells that result from Meiosis. 26. Be familiar with the process of crossing over. Know when and why it occurs. 27. Be able to determine the results of a dihybrid genetic cross such as BbTT x Bbtt. 28. Be familiar with the four blood types, and be able to match parents with offspring using blood typing information.

29. Know the cause and results of the following genetic disorders — sickle-cell anemia, Huntington's disease, Tay-Sachs disease, and cystic fibrosis. 30. Know why linked genes are inherited together. 31. Know how color blindness is inherited, and be able to determine the genotypes and phenotypes of parents and offspring in a genetic problem involving color blindness. 32. Be familiar with the process of bacterial transformation, transduction, and conjugation. 33. Be familiar with DNA replication, and know what determines the nucleotide sequence of the newly synthesized DNA strand. 34. Know the similarities and differences between DNA and RNA. 35. Given a sequence of mRNA, be able to determine the amino acid sequence that will be generated. (You will be provided a codon chart). 36. Know what happens to eukaryotic mRNA after it is transcribed, but before it can leave the nucleus. 37. Know what stops the process of elongation during translation. 38. Know what restriction enzymes are and how they work. 39. Be able to analyze a gel produced by gel electrophoresis. 40. Understand the concept of evolution by natural selection. 41. Know the difference between divergent and convergent evolution. 42. Know the criteria for maintaining Hardy-Weinberg equilibrium. 43. Be able to interpret a phylogenetic tree. 44. Know the difference between biotic and abiotic factors. 45. Given a situation, be able to describe it as sign stimulus, habituation, imprinting, classical conditioning, or operant conditioning.

Part II: Free Response Questions (2) Both of the free response questions will be lab-based. The first will relate to the AP Lab # 4: Photosynthesis, and the second will relate to AP Lab # 7: Genetics of *Drosophila*. I would suggest that you thoroughly review the concepts in both of these labs. For the essay on Lab # 4, you should be prepared to discuss

the variables, constants, and controls involved, as well as graph the data. For the essay on Lab #7, you should be able to use Punnett squares and provided formulas to analyze and interpret your data.