

Final Exam Study Guide
Biology 101
Spring 2007

Chapter 2

1. Define: atom, compound, ion, molecule
2. What are the components of an atom? What does the nucleus contain?
3. What is the atomic number? Atomic mass?

Chapter 3

4. Which atom is present in all organic compounds?
5. What two atoms do hydrocarbons contain?
6. Define: oxidation, reduction, condensation, hydrolysis
7. What is the most plentiful sugar in nature?

Chapter 4

1. What are the generalizations of the cell theory?
2. What happens to the surface area if the volume of a cell increases?
3. Know the organelles and their functions (nucleus, rough and smooth ER, Golgi bodies, mitochondria, chloroplasts)

Chapter 5

1. What are the main components of the plasma membrane? Which components are hydrophobic? Hydrophilic?
2. What types of molecules carry out most of the functions of the plasma membrane? (proteins, carbohydrates, etc.)

Chapter 6

1. Why does ATP contain potential energy?
2. Define activation energy, enzymes, metabolism
3. Why are enzymes useful in metabolism?

Chapter 7

1. Define: photosynthesis
2. What are the raw materials needed for photosynthesis?
3. What are accessory pigments of plants?
4. Which wavelengths of light are absorbed by chlorophyll?
5. Which is the shortest wavelength? Longest?

Chapter 8

1. Define: cellular respiration, aerobic respiration, lactic acid fermentation, alcoholic fermentation
2. What is used as the final electron acceptor in aerobic respiration? Is this also used as the final electron acceptor in anaerobic respiration?
3. Which is more efficient: anaerobic or aerobic respiration?

4. How many ATPs per glucose molecule are produced in: aerobic respiration?
Lactic acid fermentation?

Chapter 9

1. Know the phases of the cell cycle
2. Know the phases of mitosis and the chromosome activity in each phase
3. During what portion of the cell cycle do chromosomes duplicate? Does cell division take place?
4. What is occurring during the G1 phase?
5. Which of the phases of the cell cycle are interphase?

Chapter 10

1. Define: sexual and asexual reproduction, alleles, diploid, haploid
2. How many daughter cells are produced by mitosis? Meiosis? Are they diploid or haploid?
3. Know the phases of meiosis
4. When does crossing over occur?
5. Define: sister chromatids, homologous pair, non-sister chromatids

Chapter 11

1. Why did Mendel choose to study pea plants for his genetic studies?
2. Define: homozygous, heterozygous, dominant, recessive and be able to identify these genotypes (ex. aaBb, AaBb, etc.)
3. Define: autosomes, autosomal recessive disorder, sex chromosomes

Chapter 12

1. What causes Down's syndrome?
2. What are some major differences between X and Y chromosomes (size, number of genes, etc.)

Chapter 13

1. What are the major components of a DNA strand?
2. What are the major differences between DNA and RNA?
3. What are the nitrogenous bases? Which are purines? Pyrimidines? Which bind to which?
4. What type of bonds hold nitrogenous bases together?
5. What are the major enzymes associated with DNA replication and what are their functions?

Chapter 14

1. What is the order of information transfer in the process of protein synthesis?
2. Define: transposons, insertions, deletions,
3. How many base pairs long is a codon?
4. What is the genetic code?
5. How many amino acids are there? How many codons?
6. Know the basic principles of protein synthesis

Chapter 17

1. Define: fitness, sexual selection, polymorphism, analogous structures, homologous structures, morphological divergence,
2. Which type of sediment is best for fossilization?

Chapter 18

1. Define: gene pool, microevolution, directional, stabilizing, disruptive and sexual selection, bottleneck, founder effect,
2. Be able to identify examples of each of the above

Chapter 19

1. Define: gene flow, genetic divergence,
2. Know the different reproductive isolating mechanisms
3. Define: allopatric speciation, sympatric speciation, parapatric speciation,

Chapter 20

1. About how old is earth?
2. How did the nuclear envelope and ER membranes form?
3. What is the endosymbiotic theory?
4. What was the atmospheric composition of early earth?
5. What is the RNA world hypothesis?

Chapter 21

1. Know the general characteristics of prokaryotes
2. What are the 3 domains of life?
3. Which of these domains are prokaryotic? Eukaryotic?
4. What organisms contributed to the first oxygen rich atmosphere?
5. What does Gram staining indicate?
6. What is prokaryotic fission? Conjugation?
7. Which domain consists of organisms that live in extreme environments?

Chapter 22

1. What are the 2 main components of viruses?
2. Why aren't viruses living?
3. What are the different metabolic pathways of protists (photoautotrophs, heterotrophs, etc.)
4. What protist causes malaria? Red tide?
5. What are diatoms? Dinoflagellates?
6. Define: prions, retrovirus

Chapter 23

1. Define vascular tissue,
2. Which groups are nonvascular plants? Seedless vascular plants? Vascular plants? Flowering plants?
3. What group dominates earth today?

4. Define: seed, flower, xylem, phloem, spore, monocots, eudicots, coevolution between flowers and insects

Chapter 24

1. What are the major groups of fungi?
2. Which group contains mushrooms? Black bread mold, sac fungi,
3. Define: mycelium, hyphae, spores, parasites, lichens, mycorrhizae, ectomycorrhizae, endomycorrhizae