

Biology Semester 1 Exam Study Guide

Chapter 1 (Science of Life):

- Know what science is and is not
- Know how science differs from other disciplines
- Know and understand the steps in the scientific method
- Know the difference between a theory and a hypothesis
- Know the characteristics of living things
- Know vocabulary terms, such as homeostasis, metabolism, etc.
- Know metric measurements

Chapter 2 (Chemistry of Life):

- Know properties of water
- Know the functions of proteins
- Know and pH scale
- Know what are reactants and what are products in a chemical equation
- Know what catalysts are and how they are used
- Know the structure and function of cell membranes
- Know the heat capacity of water

Chapter 3 (The Biosphere):

- Know the difference between food chain and food web
- Know trophic levels
- Know the difference between herbivores, carnivores, and omnivores
- Know what happens as energy that is transferred in an ecological pyramid
- Which organisms feed off dead organisms
- Describe the movement of energy and nutrients
- Explain the role of scavengers
- Describe the bottom level of an ecological pyramid
- What happens to the biomass with each higher level
- Describe a food chain within a food web
- What would happen to a food web if one population died

Chapter 4 (Ecosystems and Communities):

- Give examples of abiotic factors
- What is necessary for several species live in the same habitat
- Compare primary and secondary succession
- Where does primary succession occur
- How would a species be affected if another species within the ecosystem decreased

Chapter 5 (Populations):

- Which population growth models influence its carrying capacity
- What information is necessary to determine a population's age structure
- Using a graph, describe the growth curves for populations
- What does immigration and emigration mean
- Describe the growth pattern of a population (using a graph)
- Explain the effects of new species introduced into the environment
- Explain how a limiting factor affects a population
- How do diseases and death affect other organisms within an environment
- Describe the difference between density-dependent and density-independent

Chapter 6 (Humans in the Biosphere):

- Know sources and types of pollution
- Know what biological magnification is and examples of chemicals that have been magnified (DDT)
- Know what sustainable development is and examples of it
- Know ways that biodiversity is negatively impacted
- Know ways of conserving biodiversity
- Know the function of the ozone layer and what has caused it to thin
- Describe deforestation

Chapter 7 (Cell Structure and Function):

- Know structures involved in cell movement
- Know the difference between cells, tissues, organs and organ systems and how they relate
- Know the structure and function of the cell membrane
- Know what organelles are unique to plant cells and what organelles are unique to animal cells
- Know the differences between eukaryotic cells and prokaryotic cells
- Know examples of eukaryotic cells and prokaryotic cells
- Know the different types of microscopes (compound light, SEM, TEM)
- Know the three parts of the cell theory
- Know what technological advancement made the discovery of cells possible

Chapter 8 (Photosynthesis):

- Know the difference between autotrophs and heterotrophs and examples of each
- Know the products and reactants of photosynthesis
- Know how photosynthesis and respiration are interrelated
- Know what would happen to rates of photosynthesis if the amount of light, water or carbon dioxide were to change
- Know what the major atmospheric byproduct of photosynthesis
- Know what happens to chlorophyll when it is struck by sunlight
- Know what is happening to autotrophs and heterotrophs, if any, during photosynthesis
- Know what structures are involved in photosynthesis and respiration in both plants and animals

Chapter 9 (Cellular Respiration and Fermentation):

- Know the stages of cellular respiration
- Know the equation for cellular respiration
- Know the products and reactants of cellular respiration
- Know where the different steps in cellular respiration take place
- Know how the reactants and products of cellular respiration are related to the reactants and products of photosynthesis
- Know what conditions must exist in order for the Krebs cycle to occur
- Know where lactic acid fermentation occur
- Know what the two types of fermentation are

Chapter 10 (Cell Growth and Division):

- Know what happens to cell's volume as the surface area increase, and vice versa
- Know what control's the rate of waste production in cells
- Know why cells must be small
- Know what cell division is and what important events are taking place in each stage
- Know when in the cell cycle are the chromosomes visible?
- Know where in the cell cycle interphase and mitosis take place
- Know what is cancer and what leads to cancer
- Know what cell differentiation is
- Know what stem cells are and why they are important