

ADVANCED PLACEMENT BIOLOGY

**OPTIONAL SUMMER READING
PACKET**

2011-2012

MR. LOGSDON

ADVANCED PLACEMENT BIOLOGY
OPTIONAL SUMMER READING ASSIGNMENTS

The following are ***OPTIONAL*** reading assignments, labs, essay, and guided questions for Advanced Placement Biology. This material will be covered during the first week of class. If you like, you may complete all self-quizzes at the end of each chapter to test yourself.

PLEASE READ THE FOLLOWING CHAPTERS:

CHAPTER 50: AN INTRODUCTION TO ECOLOGY AND THE BIOSPHERE.

CHAPTER 51: BEHAVIORAL ECOLOGY.

CHAPTER 52: POPULATION ECOLOGY.

CHAPTER 53: COMMUNITY ECOLOGY.

CHAPTER 54: ECOSYSTEMS

CHAPTER 1: EXPLORING LIFE

CHAPTER 2: THE CHEMICAL CONTEXT OF LIFE.

CHAPTER 3: WATER AND THE FITNESS OF THE ENVIRONMENT.

This material is a review of Green Biology, Blue Biology, and Chemistry. Have an awesome summer!!!!!!!!!! See you all next fall!!!!!!!!!!

Mr. Logsdon

ADVANCED PLACEMENT BIOLOGY SUMMER PACKET

ADVANCED PLACEMENT BIOLOGY CHAPTER 50 AN INTRODUCTION TO ECOLOGY AND THE BIOSPHERE GUIDED QUESTIONS

VOCABULARY:

Abio~~ogy~~-

~~Abi~~otic/ biotic-

Species/ populations/ communities-

Biosphere-

Ecotone-

- 1) Describe the zonation of a lake and marine environment. Use the terms littoral, limnetic, photic, aphotic, benthic and pelagic in describing the lake and intertidal, oceanic, benthic, abyssal, pelagic, aphotic, photic zones to describe the marine environment.
- 2) Describe the global air circulation and precipitation patterns on Earth. How do these abiotic factors help define biomes?
- 3) Biomes: Describe the location, climate, landscape features, characteristic plants and animals of the following biomes: Tropical rain forest, savanna, desert, chaparral, temperate grassland, coniferous forest, temperate forest, and tundra. You may use the prepared biome log that is provided but it is not mandatory.
- 4) Complete the self-quiz found on pages 1104 and 1105, 1-10. Answers are found in Appendix 1.

CHAPTER 51
BEHAVIORAL ECOLOGY
GUIDED QUESTIONS

VOCABULARY:

Proximate questions-

Ultimate questions-

Ethology-

Fixed action pattern-

Imprinting-

Innate behavior-

Kinesis-

Taxis-

Pheromones-

Spatial learning-

Optimal foraging theory-

Promiscuous-

Monogamous-

Polygamous-

Polygyny-

Polyandry-

Agonistic behavior-

Describe the myth associated with animal behavior regarding nature versus nurture. How do biologists deal with the issues today?

- 1) In the learning process maturation takes place during animal development. Use the example in the book of a bird learning to fly to explain this phenomenon.
- 2) Compare and contrast Pavlov's classical and operant conditioning.
- 3) Describe the altruistic behavior and communication dances that bees exhibit.
- 4) Complete the self-quiz found on pages 1134 and 1135, 1-10. Answers are found in Appendix 1.

CHAPTER 52
POPULATION ECOLOGY
GUIDED QUESTIONS

VOCABULARY:

Population-

Immigration-

Emigration-

Life tables-

Demography-

Cohort-

Semelparity-

Iteroparity-

Exponential population growth-

Carrying capacity-

Generation time-

Logistic population growth-

K-selection-

R-selection-

Density independent-

Density dependent-

Age structure-

Survivorship curve-

- 1) Describe the three patterns of dispersion and give examples: clumped, uniform, and random.
- 2) Distinguish between the three types of survivorship curves using examples. What are the exceptions to this model?
- 3) Using examples of each, explain the difference between the exponential and logistic models of population growth. What factors define carrying capacity and what connections can be made with our human population growth?
- 4) What are population cycles? Explain the example of the snowshoe hare and lynx from the text.
- 5) How can age structure pyramids be used to predict present and future growth trends?
- 6) Complete the self-quiz on page 1158, 1-10. Answers are found in Appendix 1.
- 7) Complete the lab "Human Population Studies". Use the obituary section of the dispatch to sample 100 deaths by age. You will need multiple newspapers for this study.
- 8) Complete the lab, "Ecology Fish Study".

CHAPTER 53
COMMUNITY ECOLOGY
GUIDED QUESTIONS

VOCABULARY:

Predation-

Herbivory-

Commensalism-

Mutualism-

Biogeography-

Primary succession-

Secondary succession-

Stability-

- 1) Describe coevolution and give an example. What is the problem with this concept?
- 2) Explain the following animal defenses:
 - a. Cryptic coloration-
 - b. Aposematic coloration-
 - c. Mimicry-
 - d.
- 3) Describe the difference between Batesian Mimicry and Mullerian Mimicry.
- 4) Distinguish between intraspecific and interspecific competition/ interference and exploitative competition.
- 5) Explain G.F Gause's experiment and how it was later used to define the Competitive Exclusion Principle.
- 6) Discuss the Resource Partitoning study of *Anolis* (group of symatric lizards).
- 7) Complete the self-quiz found on page 1182, 1-10. Answers can be found in Appendix 1.

CHAPTER 54
ECOSYSTEMS
GUIDED QUESTIONS

VOCABULARY:

Primary producers-

Autotrophs/heterotrophs-

Food chains/ food webs-

Primary productivity-

Gross productivity-

Net productivity-

Biomass-

Standing crop-

Ecological efficiency-

- 1) Define the following biochemical cycles: Nitrogen, phosphorus, carbon, and hydrologic.
- 2) Describe the pyramid of production, trophic efficiency and loss of energy through a food web.
- 3) Complete the self-quiz on pages 1207 and 1208, 1-10. Answers can be found in Appendix 1.

CHAPTER 1
INTRODUCTION: THEMES IN THE STUDY OF LIFE.
GUIDED QUESTIONS

- 1) What is meant by a hierarchy of organization?
- 2) What is meant by emergent properties?
- 3) Compare and contrast animal and plant cells.
- 4) What is the role of DNA?
- 5) What is a species? How many species have been identified and named? How many species are estimated to exist?
- 6) Define taxonomy.
- 7) Name the 5 kingdoms, give a general description of the organisms included in each kingdom and a common example.
- 8) What are the 2 key ingredients of science or the scientific process?
- 9) What contributions did the following scientists make to the study of biology?
Robert Hooke, Anton Leeuwenhoek, Matthias Scheiden, Theodor Schwann,
Charles Darwin, and Stanley Miller.

CHAPTER 2
THE CHEMICAL CONTEXT OF LIFE
GUIDED QUESTIONS

- 1) Review all chemistry terms!!!!!!
- 2) Explain why radioisotopes are important to biologists.
- 3) Explain how atomic number and valence are related to the chemical behavior of an atom.
- 4) Define electronegativity and explain how it influences
- 5) Complete the self-quiz on page 46, 1-10.

CHAPTER 3
WATER AND THE FITNESS OF THE ENVIRONMENT
GUIDED QUESTIONS

- 1) Describe how water contributes to the fitness of the environment to support life.
- 2) Describe the structure and geometry of a water molecule, and explain what properties emerge as a result of this structure.
- 3) Explain the relationship between the polar nature of water and its ability to form hydrogen bonds.
- 4) Explain how water's high specific heat, high heat of vaporization and expansion upon freezing affect both aquatic and terrestrial ecosystems.
- 5) Explain how acids and bases directly or indirectly affect the hydrogen ion concentration of a solution.
- 6) Complete the self-quiz found on page 57, 1-10. Answers can be found in Appendix 1.

ADVANCED PLACEMENT BIOLOGY CHAPTER 3 ESSAY

- 1) The unique properties (characteristics) of water make life possible on Earth. Select three properties of water and:
 - a) for each property, identify and define the property and explain it in terms of the physical/ chemical nature of water.
 - b) for each property, describe one example of how the property affects the functioning of living organisms.

THE END!