



AP[®] Biology 2006 Free-Response Questions

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2006 AP[®] BIOLOGY FREE-RESPONSE QUESTIONS

BIOLOGY

SECTION II

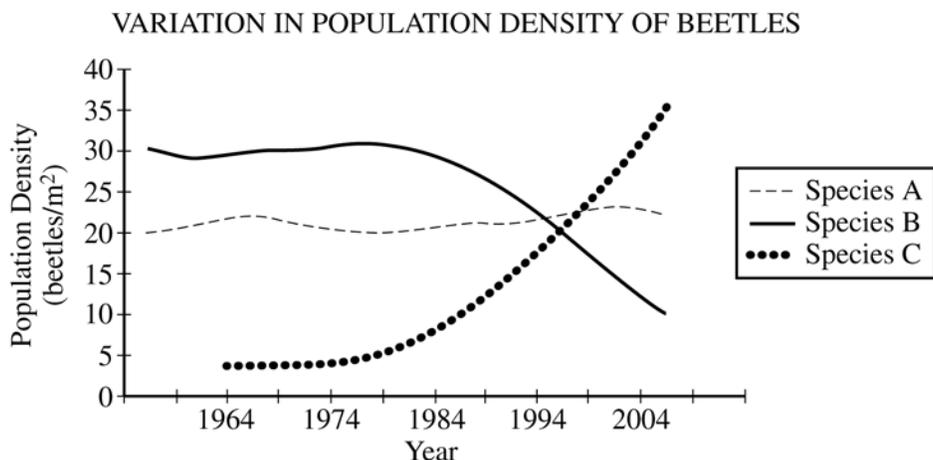
Time—1 hour and 30 minutes

Directions: Answer all questions.

Answers must be in essay form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but in no case will a diagram alone suffice. It is important that you read each question completely before you begin to write. Write all your answers on the pages following the questions in the pink booklet.

1. A major distinction between prokaryotes and eukaryotes is the presence of membrane-bound organelles in eukaryotes.
 - (a) **Describe** the structure and function of TWO eukaryotic membrane-bound organelles other than the nucleus.
 - (b) Prokaryotic and eukaryotic cells have some non-membrane-bound components in common. **Describe** the function of TWO of the following and **discuss** how each differs in prokaryotes and eukaryotes.
 - DNA
 - Cell wall
 - Ribosomes
 - (c) **Explain** the endosymbiotic theory of the origin of eukaryotic cells and **discuss** an example of evidence supporting this theory.

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2. According to fossil records and recent published observations, two species of leaf-eating beetles (species A and B) have existed on an isolated island in the Pacific Ocean for over 100,000 years. In 1964 a third species of leaf-eating beetle (species C) was accidentally introduced on the island. The population size of each species has been regularly monitored as shown in the graph above.
- Propose** an explanation for the pattern of population density observed in species C.
 - Describe** the effect that the introduction of beetle species C has had on the population density of species A and species B. **Propose** an explanation for the patterns of population density observed in species A and in species B.
 - Predict** the population density of species C in 2014. Provide a biological explanation for your prediction.
 - Explain** why invasive species are often successful in colonizing new habitats.
3. The movement of water through vascular plants is important to their survival.
- Explain** the mechanism of water movement through vascular plants during transpiration. Include a discussion of how the anatomy of vascular plants and the properties of water contribute to this process.
 - Explain** how gas exchange affects transpiration.
 - Describe** TWO adaptations that affect the rate of transpiration in desert plants.
4. The evolution of circulatory systems allowed larger and more-complex animals to arise.
- Describe** the respiratory and digestive systems' specialized structures that facilitate the movement of oxygen and glucose into the circulatory system of mammals.
 - Explain** how oxygen and glucose are transported within the circulatory system of mammals.
 - Explain** the transfer of oxygen and glucose from the blood and into the active cells of mammals.

END OF EXAM

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