Evolution

2000

To survive, organisms must be capable of avoiding, and/or defending against, various types of environmental threats. Respond to **each** of the following.

a) Describe how adaptive coloration, mimicry, **or** behavior function as animal defenses against predation. Include two examples in your answer.

b) Describe how bacteria **or** plants protect themselves against environmental threats. Include **two** examples in your answer.

Compare the human primary immune response with the secondary immune response to the same antigen

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2004

Darwin is considered the "father of evolutionary biology." Four of his contributions to the field of evolutionary biology are listed below.

• The nonconstancy of species
• Branching evolution, which implies the common descent of all species • Occurrence of gradual changes in species
• Natural selection as the mechanism for evolution

(a) For EACH of the four contributions listed above, **discuss** one example of supporting evidence.

(b) Darwin's ideas have been enhanced and modified as new knowledge and technologies have become available. **Discuss** how TWO of the following have modified biologists' interpretation of Darwin's original contributions.

Hardy-Weinberg equilibrium Punctuated equilibrium
Genetic engineering

Evolution

2005b

In the evolution of organisms, major adaptations arose in certain groups, opening new evolutionary possibilities. For **two** of the following types of organisms, discuss the evolutionary significance of the features listed.

(a) Flowering plants: flowers, fruits and seeds, and broad leaves

(b) Flatworms: three germ layers, bilateral symmetry, and cephalization

(c) Segmented worms: segmentation, coelom, and digestive system

(d) Reptiles: amniotic eggs, waterproof skin, and well-developed lungs

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2006

A major distinction between prokaryotes and eukar[y]otes is the presence of membrane-bound organelles In eukaryotes.

a) **Describe** the structure and function of TWO eukaryotic membrane-bound organdIes 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.

Evolution

2011

1. During an investigation of a freshwater lake, an AP Biology student discovers a previously unknown microscopic organism. Further study shows that the unicellular organism is eukaryotic.

(a) **Identify** FOUR organelles that should be present in the eukaryotic organism and **describe** the function of each organelle.

(b) Prokaryotic cells lack membrane-bound organelles found in eukaryotes. However, prokaryotes must perform many of the same functions as eukaryotes. For THREE of the organelles identified in part (a), **explain** how prokaryotic cells carry out the associated functions.

(c) According to the endosymbiotic theory, some organelles are believed to have evolved through a symbiotic relationship between eukaryotic and prokaryotic cells. **Describe** THREE observations that support the endosymbiotic theory.