



AP[®] Biology
2009 Free-Response Questions
Form B

The College Board

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2009 AP[®] BIOLOGY FREE-RESPONSE QUESTIONS (Form B)

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 goldenrod booklet.

1. **Describe** how a plasmid can be genetically modified to include a piece of foreign DNA that alters the phenotype of bacterial cells transformed with the modified plasmid. **Describe** a procedure to determine which bacterial cells have been successfully transformed.
2. **Discuss** the patterns of sexual reproduction in plants. **Compare** and **contrast** reproduction in nonvascular plants with that in flowering plants. **Include** the following topics in your discussion:
 - (a) alternation of generations
 - (b) mechanisms that bring female and male gametes together
 - (c) mechanisms that disperse offspring to new locations

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3. Water is essential to all living things.
- (a) **Discuss** THREE properties of water.
 - (b) **Explain** each of the following in terms of the properties of water. You are not limited to the three properties discussed in part (a):
 - the role of water as a medium for the metabolic processes of cells
 - the ability of water to moderate temperature within living organisms and in organisms' environments
 - the movement of water from the roots to the leaves of plants
4. Many organisms require a continuing source of oxygen for respiration. **Discuss** important structural and physiological adaptations for oxygen uptake in THREE of the following:
- a paramecium
 - a tree
 - a fish
 - a mammal

END OF EXAM