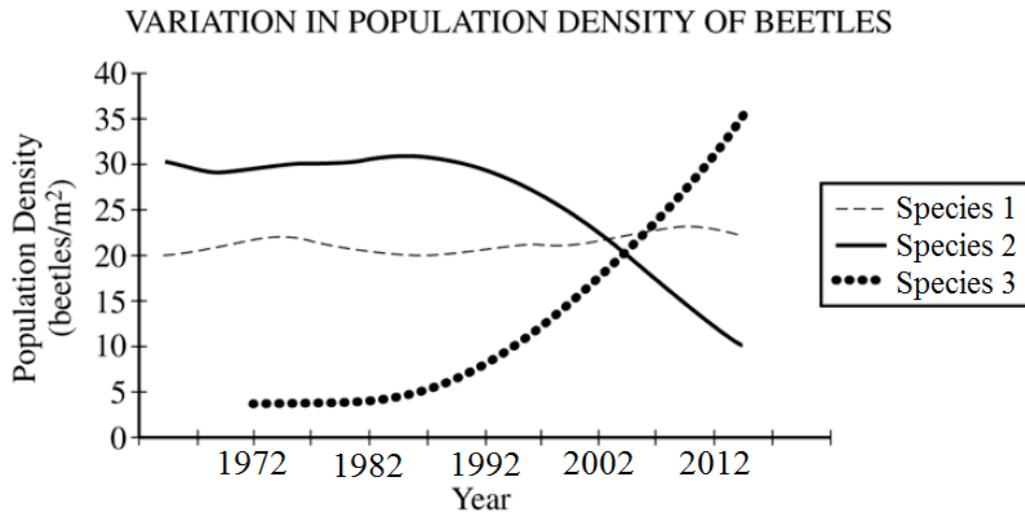


ESSAY 2*Due Friday, March 2, 2018*

Answers must be written out in paragraph form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but a diagram without a written explanation will not receive credit. You must cite the source of all information you mention. Include the page number of information from the textbook or the web address of information found online.



Fossil records suggest that two herbivorous species (1 and 2) of the Cerambycidae longhorn beetle family have existed on an isolated island in the Pacific Ocean for over 20,000 years. In 1972 a third species of herbivorous longhorn beetle (species 3) was accidentally introduced on the island. The population size of each species has been regularly monitored as shown in the graph above.

- (a) **Calculate** the population growth rate in $\frac{\text{beetles}}{\text{m}^2 \times \text{year}}$ from 1992 to 2012 for species 1, 2, and 3.
Show all work and **interpret** the meaning of the final answer for each species.
- (b) **Propose** TWO explanations to account for the observed pattern of growth in species 3.
- (c) **Describe** the effect that the introduction of beetle species 3 has had on the population density of species 1 and the population density of species 2. **Propose** an explanation for the patterns of population density observed after 1972 in species 1 and in species 2.
- (d) **Predict** the population density in $\frac{\text{beetles}}{\text{m}^2}$ of species 3 in 2022. **Justify** your prediction with a biological explanation.

CHAPTER 46

*Approximately 75% of this assignment is due in class on Monday, March 5, 2018
 The completed assignment, in its entirety, is due Tuesday, March 6, 2018*

Read Hillis Chapter 46. Answer the following concept questions in complete sentences:
 Concept 46.1 (both questions); Concept 46.2 (question 2); Concept 46.3 (questions 1 & 2)

CHAPTER 29

*Approximately 75% of this assignment is due in class on Tuesday, March 13, 2018
 The completed assignment, in its entirety, is due Wednesday, March 14, 2018*

Read Hillis Chapter 29, and answer the following concept questions in complete sentences:
 Concept 29.1 (all questions); Concept 29.2 (question 1); Concept 29.3 (question 1);
 Concept 29.4 (questions 2 & 4); Concept 29.5 (question 2)

CHAPTER 30 *Approximately 75% of this assignment is due in class on Monday, March 19, 2018
The completed assignment, in its entirety, is due Tuesday, March 20, 2018*

Read Hillis Chapter 30 and answer ALL concept questions (30.1–30.4) in complete sentences EXCEPT for the last question in Concept 30.2.

Hint: The last question in Concept 30.3 is asking how the brain interacts with the anterior pituitary gland and how the brain interacts with the posterior pituitary gland.

STUDY PLAN *Due Thursday, March 22, 2018*

Create a detailed study plan and calendar for how you will use the four weeks between March 22 and May 14 to prepare for the AP Biology Exam.

CHAPTERS 28 & 31 *Approximately 75% of this assignment is due in class on Monday, March 26, 2018
The completed assignment, in its entirety, is due Tuesday, March 27, 2018*

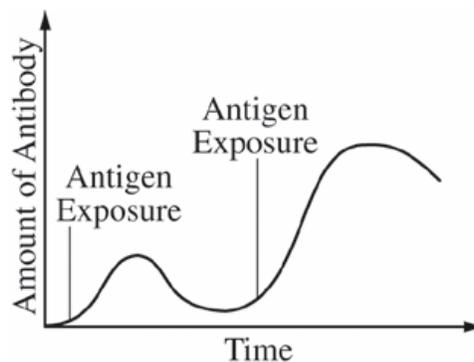
Read Hillis Section 28.1 and answer the first concept question.

Read Hillis Section 28.2 and answer the first concept question.

Read Hillis Chapter 31 and answer all concept questions 31.1–31.4 (NOT 31.5) EXCEPT for the last question in Concept 31.3.

ESSAY 3 *Due Thursday, March 29, 2018*

Answers must be written out in paragraph form. Outline form is not acceptable. Labeled diagrams may be used to supplement discussion, but a diagram without a written explanation will not receive credit. You must cite the source of all information you mention. Include the page number of information from the textbook or the web address of information found online.



The graph above shows changes in an individual's humoral response when exposed to the same antigen at two separate points in time.

- Describe** FOUR steps in the activation of a specific immune response following the initial exposure to the antigen, and **connect** the trend in the graph to the production and/or activity of a specific immune system cell.
- Predict** how the trend in the graph would be different if the two exposures were each from a different antigen. **Justify** your prediction.
- The Human Immunodeficiency Virus (HIV) compromises an individual's immune response by infecting vital components such as helper T cells, dendritic cells, and macrophages. **Describe** ONE component of an individual's immune response that would NOT be compromised by HIV infection. **Provide reasoning** to support your description.
- Explain** the difference between an infection caused by an antigen and an allergy caused by an antigen.