

Introduction to the Exam

GENERAL INFORMATION

The AP Biology course is designed to be the equivalent of a two-semester, college introductory biology course and is meant to be taken after a first-year high school biology course. This course is rigorous. The textbook you are using probably has more than twelve hundred pages. You have nine and a half months to complete it and to prepare for the exam, which is in mid-May. You will be reading volumes of text, devising and carrying out sophisticated experiments, and writing lots of essays.

This book has fifteen chapters of subject area review, which most likely follow the same order as the textbook you are using. All key words are in **bold**, and vocabulary terms are defined in the glossary. After each review section, the book provides sample multiple-choice questions with answers and explanations. There are many sample essays throughout the book, which will give you plenty of practice answering free-response questions.

The College Board requires AP Biology students to complete twelve college-level lab exercises before the examination. This book includes a complete review of all twelve labs and gives you detailed guidelines on how to devise an experiment.

During the school year, study from your textbook and your notes from class and then review from this book. This book is tailored to help you prepare for the AP Exam as well as for exams during the school year.

Good luck.

THE AP EXAM

The AP Exam is three hours long and is composed of two parts. Part I consists of an 80-minute, 100-item multiple-choice section, which tests all content areas and counts for 60 percent of the exam grade. Part II begins with a 10-minute reading interval in which you have the opportunity to read the four required free-response questions, gather your thoughts and jot down key words, and prepare to write your essays. After the reading interval, you have 90 minutes in which to write the essays in the exam booklets. These essays count for 40 percent of the exam and consist of four mandatory questions that encompass broader topics than those in Part I. You get a short break between Part I and Part II.

Here is an example of the different types of questions you might find in each section. Whereas a Part I question might ask for a simple recall of a fact about muscle cells, the free-response question asks you to explain particular details and to *make connections* between separate broad themes.

- **Sample Part I Question**

Which of the following is not involved in the regulation of blood sugar?

- (A) adrenaline
- (B) insulin
- (C) glucagon
- (D) cortisol
- (E) estrogen

- **Sample Part II Question**

Regulation is a major theme in biology. Discuss one example of regulation at each of the following levels: molecular, cellular, organismal, and population.

Here is a breakdown of the topics and percentages covered in this course. The AP Exam seeks to be representative of these same percentages.

TABLE 1.1**AP Biology Exam**

Topics	Percent of Course
I. Molecules and Cells A. Chemistry of Life Water Organic molecules in organisms Free energy changes Enzymes B. Cells Prokaryotes and eukaryotes Membranes Subcellular organization Cell cycle and its regulation C. Cellular Energetics Coupled reactions Fermentation and cellular respiration Photosynthesis	25%
II. Heredity and Evolution A. Heredity Meiosis and gametogenesis Eukaryotic chromosomes Inheritance patterns B. Molecular Genetics RNA and DNA structure and function Gene regulation Mutation Viral structure and replication Nucleic acid technology and applications C. Evolutionary biology Early evolution of life Evidence of evolution Mechanisms of evolution	25%
III. Organisms and Populations A. Diversity of Organisms Evolutionary patterns Survey of the diversity of life Phylogenetic classification Evolutionary relationships B. Structure and Function of Plants and Animals Reproduction, growth, and development Structural, physiological, and behavioral adaptations Response to the environment C. Ecology Population dynamics Communities and ecosystems Global issues	50%

GRADES ON THE EXAM

Advanced placement and/or college credit is awarded by the college or university you will attend. Different institutions observe different guidelines about awarding AP credit. Success on the AP Exam may allow you to take a more advanced course and bypass an introductory course, or it might qualify you for 8 credits of advanced standing and tuition credit. The best source of specific up-to-date information about an institution's policy is its catalog or web site.

Exams are graded on a scale from 1 to 5, with 5 being the best. The total raw score on the exam is translated to the AP's 5-point scale.

AP Grade	Qualification
5	Extremely Well Qualified
4	Well Qualified
3	Qualified
2	Possibly Qualified
1	No Recommendation

Here are the grade distributions for all the students who recently sat for the exam. These numbers tend to be consistent from year to year.

Exam Grade	Student Scoring that Grade
5	19.6%
4	22.1%
3	23.5%
2	21.8%
1	13.1%

Part I questions have always been designed so that the mean score (50 percent) is based on getting about half the questions correct. That means that if you got half the questions in Part I correct, you got a 3 on that section. On the new test, getting 50 questions correct will give you a 3 on this exam.

Part II questions are also designed to achieve a mean score of 50 percent, but scores vary significantly among the four questions. On the 1999 exam, mean scores ranged from 2.51 to 3.82 (out of a possible 10 points) for each of the four questions. This is consistent with results from other years.

Both Part I and Part II questions are designed to be difficult. In spite of their difficulty, though, about 65 percent of the candidates earn an AP grade of 3 or higher.

HINTS FOR TAKING THE MULTIPLE-CHOICE SECTION

BE NEAT

Improperly erased pencil marks can cause the machine to misgrade your paper. On the other hand, you may write or draw anywhere in the question booklet.

PACE YOURSELF

The first 60 questions are easy to read and straightforward. The remaining questions are more time consuming. They require interpreting and analyzing data. So work quickly at the beginning and leave time for the more involved questions.

SHOULD YOU GUESS OR SHOULD YOU LEAVE IT BLANK?

By this time in your high school career, you know how good a guesser you are. **The AP Exam is graded with a penalty for wrong answers.** If you get an answer right, you gain a point. If you leave it out, you do not get the point. However, if you get the question wrong, you lose $\frac{1}{4}$ point. So if you don't know anything about the question, do not guess. If you can narrow the choices down to two or three, go ahead and guess.

READ CAREFULLY AND WATCH OUT FOR TRICKY WORDS

Questions with EXCEPT or NOT often trip students up. Also, pay attention to “Which of the following is FALSE?” or “Which of the following is TRUE?”

HINTS FOR TAKING THE FREE-RESPONSE SECTION

This section includes four essays. **You must answer all of them.** The four essays are drawn from three topics: molecules and cells, heredity and evolution, and organisms and populations. At least one of the essays will be lab based and will test your ability to interpret scientific data and/or design a controlled experiment.

The free-response questions are probably different from any standardized test questions that you have ever taken. You must approach them in a special way. Of greatest importance is what the readers look for and how they grade an essay; see chapter 20, “How to Grade an Essay.”

CHAPTER 19 IS A GREAT REFERENCE FOR YOU

Just as an Olympic athlete must anticipate what the judges want to see, you must be prepared to give the exam readers what they want to read. If you can do that on the AP Exam, you will succeed.

Here are things the readers **do not** particularly care about:

Spelling

Penmanship (unless they cannot read the paper)

Grammar

Wrong information—**You do not get points off for incorrect statements.**

Here are the things the graders **do** care about:

The answer must be in essay form, not an outline.

Lots of correct information—so write, write, and write!

YOU DO NOT LOSE POINTS FOR GIVING INCORRECT INFORMATION

You start out with zero points and you gain points as you state correct things that answer the question. The reader does **not take off points for any reason**, not even incorrect information. He or she only adds points. The reader is like the person who stands at the entrance to a concert and uses a clicker to count the number of people entering. He or she reads your essay. Every time you state a correct piece of information that answers the question, you get a click; that is, you get credit. It is straightforward.

ANSWER ALL FOUR ESSAYS IN ANY ORDER

Each essay is worth 10 points. If you answer only three essays, even if they are masterpieces and you get full credit on each, you still will get only 30 out of 40 points.

ANSWER EVERY PART OF THE ESSAY

Each essay is worth 10 points. If the essay is divided into two parts, each section is worth 5 points. If you write a ten-page masterpiece on the first part of the essay but you leave out the second part of the essay, you still get only 5 points. If there are three parts to the essay, each part will be worth 3 points with an extra point given to the section where you have demonstrated extra depth of understanding, for a total of 10 points.

BRING A WATCH AND BUDGET YOUR TIME

You have 90 minutes total; 22 minutes for each essay. The exam proctors will **not** announce when it is time to move from one essay to another. You must monitor the time. One essay may take you 30 minutes, but you may find that you have answered another essay satisfactorily in 10 minutes.

WATCH OUT FOR TRICKY WORDS

Read the question and determine what you must do: “Describe,” “Explain,” “Compare,” or “Contrast.” Pay particular attention to the word *or*. Some years ago, the students were asked to discuss “*either* the nitrogen cycle *or* the carbon cycle.” Some AP students, trying to give the readers more than was asked, mentioned the nitrogen cycle before diving into their intended topic, which was the carbon cycle. Since the students had begun writing about the nitrogen cycle first, the readers were required to grade the essay based on the little that the students had written on the nitrogen cycle. The students had not read carefully and did not do well as a result.

TAKE TIME TO ORGANIZE YOUR THOUGHTS

On the new-format exam, you have a 10-minute reading period to allow you time to think, analyze, and generally prepare to write the essay. Brainstorm and write down all the **key words** you can think of that relate to each topic. Then look over the key words, eliminate the ones that are not related, and prioritize the ones you will be writing about. Present your ideas, in order, *from the general to the particular*. After the reading period is over, you may begin to write your essay.

DO NOT LEAVE OUT BASIC MATERIAL

Many students think that a college-level essay should contain only the most complex ideas. This is incorrect. Include everything you can think of that is related to the topic and answers the question. Remember, you are trying to accumulate points by presenting relevant, correct statements.

DO NOT CONTRADICT YOURSELF

No points will be given if you give contradictory information. For example, you will receive no credit if you state, “The Calvin cycle occurs in the stroma of chloroplasts,” and you also write, “the Calvin cycle occurs in the grana of chloroplasts.”

LABEL YOUR ANSWERS

Number each essay—1, 2, 3, and 4—and label all parts, such as 1a, 1b, and 1c. For readability, leave at least one line between essays. If the reader cannot find your answer, you cannot get any credit.

YOU MAY INCLUDE DRAWINGS

Drawings must be *titled* and *labeled*. They must be near the text they relate to. You may *not* use drawings instead of writing an essay.

DO NOT WRITE FORMAL ESSAYS

You do not need to include an introduction, a body, and a conclusion. Doing so is not expected and may take up too much time. Jump right in and answer the question.

DO NOT WORRY

You do not have to include every piece of information about the topic to get full credit. Usually, each essay question is very broad, and there are plenty of ways to get full credit. Remember the reader with the clicker, so just write, write, and write!