Helpful Hints for FRQs

The AP Exam will contain six (6) Free-Response Questions; two (2) long free response questions and four (4) short free response questions. Fifty percent (50%) of the AP Exam score is based on these six questions, which require you to think conceptually, and often require the application of knowledge from several different areas of Biology. There will be a set of free-response questions on each test this year which will also count for 50% of each test grade, as well as many in-class assignments. Use these suggestions when writing your essays. It may be difficult at first, but you will get better with time.

**Important Words to Understand**

*In order to be successful in writing good answers to FRQs, you MUST have a clear understanding of the words below. The following task verbs are commonly used in the free-response questions:*

**Calculate:** Perform mathematical steps to arrive at a final answer, including algebraic expressions, properly substituted numbers, and correct labeling of units and significant figures.

**Construct/Draw:** Create a diagram, graph, representation, or model that illustrates or explains relationships or phenomena. Labels may or may not be required.

**Describe:** Provide relevant characteristics of a specified topic.

**Determine:** Decide or conclude after reasoning, observation, or applying mathematical routines (calculations).

**Evaluate:** Judge or determine the significance or importance of information, or the quality or accuracy of a claim.

**Explain:** Provide information about how or why a relationship, process, pattern, position, situation, or outcome occurs, using evidence and/or reasoning to support or qualify a claim.

* Explain “how” typically requires analyzing the relationship, process, pattern, position, situation, or outcome
* Explain “why” typically requires analysis of motivations or reasons for the relationship, process, pattern, position, situation, or outcome.

**Identify:** Indicate or provide information about a specified topic, without elaboration or explanation.

**Justify:** Provide evidence to support, qualify, or defend a claim, and/or provide reasoning to explain how that evidence supports or qualifies the claim.

**Make a claim:** Make an assertion that is based on evidence or knowledge.

**Predict/Make a prediction:** Predict the causes or effects of a change in, or disruption to, one or more components in a relationship, pattern, process, or system.

**Represent:** Use appropriate graphs, symbols, words, illustrations, and/or tables of numerical values to describe biological concepts, characteristics, and/or relationships.

**State (the null/alternative hypothesis):** Indicate or provide a hypothesis to support or defend a claim about a scientifically testable question.

**Support a claim:** Provide reasoning to explain how evidence supports or qualifies a claim.

**Exam Section 2 Break-down**

* Long FRQs (1 & 2) = 18 points
* Short FRQs (3 – 6) = 16 points

**Free-response question 1: Interpreting and Evaluating Experimental Results** is an 8 to 10-point question that presents students with an authentic scenario accompanied by data in a table and/or graph. This question assesses student ability to do the following in four question parts:

* Part A (1 to 2 points): Describe and explain biological concepts, processes, or models.
* Part B (3 to 4 points): Identify experimental design procedures.
* Part C (1 to 3 points): Analyze data.
* Part D (2 to 4 points): Make and justify predictions.

**Free-response 2: Interpreting and Evaluating Experimental Results with Graphing** is an 8 to 10-point question that presents students with an authentic scenario accompanied by data in a table. This question assesses students’ ability to do the following in four question parts:

* Part A (1 to 2 points): Describe and explain biological concepts, processes, or models.
* Part B (4 points): Construct a graph, plot or chart and use confidence intervals or error bars.
* Part C (1 to 3 points): Analyze data.
* Part D (1 to 3 points): Make and justify predictions.

**Free-response question 3: Scientific Investigation** is a 4-point question that presents students with a description of a lab investigation scenario. This question assesses students’ ability to do the following in four question parts:

* Part A (1 point): Describe biological concepts or processes.
* Part B (1 point): Identify experimental procedures.
* Part C (1 point): Predict results.
* Part D (1 point): Justify predictions.

**Free-response question 4: Conceptual Analysis** is a 4-point question that presents students with an authentic scenario describing a biological phenomenon with a disruption. This question assesses students’ ability to do the following in four question parts:

* Part A (1 point): Describe biological concepts or processes.
* Part B (1 point): Explain biological concepts or processes.
* Part C (1 point): Predict the causes or effects of a change in a biological system.
* Part D (1 point): Justify predictions.

**Free-response question 5: Analyze Model or Visual Representation** is a 4-point question that presents students with a description of an authentic scenario accompanied by a visual model or representation. This question assesses students’ ability to do the following in four question parts:

* Part A (1 point): Describe characteristics of a biological concept, process, or model represented visually.
* Part B (1 point): Explain relationships between different characteristics of a biological concept or process represented visually.
* Part C (1 point): Represent relationships within a biological model.
* Part D (1 point): Explain how a biological concept or process represented visually relates to a larger biological principle, concept, process, or theory.

**Free-response question 6: Analyze Data** is a 4-point question that presents students with data in a graph, table, or other visual representation. This question assesses students’ ability to do the following in four question parts:

* Part A (1 point): Describe data.
* Part B (1 point): Describe data.
* Part C (1 point): Use data to evaluate a hypothesis or prediction.
* Part D (1 point): Explain how experimental results relate to biological principles, concepts, processes, or theories.

**Understanding the Directions**

The instructions on the AP Exam will be as follows:

**Directions:** Questions 1 and 2 are long free-response questions that require about 25 minutes each to answer. Questions 3 through 6 are short free-response questions that require about 10 minutes each to answer. Read each question carefully and completely. Write your response in the space provided for each question. Only material written in the space provided will be scored. Answers must be written out in paragraph form. Outlines, bulleted lists, or diagrams alone are not acceptable

This means:

1. Everything must be **fully** explained or described. Do not assume that the reader knows what you mean. **Points are given for content, not intent.**
2. Diagrams must be referred to and explained in the narrative of an answer. ***A stand-alone diagram does not earn points.***
3. Read the question carefully to be sure you understand what is being asked of you.

Mis-interpretations of the question are not accounted for in the rubrics and will not be considered.

1. Use only the space allotted for on the page. Answers written in any other place will not be read nor scored.
2. The bulk of your time should be spent on the long free response questions. The short free response questions are not supposed to take a long time to answer, and they should be written concisely!
3. You must use a pen with navy blue or black ink, just like on your FRQs in class.

**Hints For How To Approach Free Response Questions**

1. **Read the question carefully**, noting especially the instructional words (describe, explain, compare, design, justify, etc.). It is your responsibility to frame your answer so that you have the best chance of earning all the points you deserve.
2. **Restating the question earns no points.** Dive right into the answer to save time. An introductory or summary paragraph is not necessary and usually earns no points.
3. **Organize your thoughts** before you begin to write. Think in terms of organizing the question as it is asked. If it has three distinct parts, then organize your answer in three distinct parts.
4. **Use dark blue or black (preferable) ink.** Avoid using a felt-tip pen. Avoid excessive scratch-outs.
5. **Answer the question about which you know the most first.** You are not obligated to answer questions in any specific order unless a question requires graphing. In that case, the question should be answered wherever the graph paper is located.
6. **If the question breaks naturally into parts, leave several lines between the answers** to insert more information later as it comes to you. You may even prefer to answer each part on a separate page; just mark your paper plainly so that it is obvious that there is more on the next page. Readers may actually enjoy the break of turning the page to read the rest of your answer.
7. **Develop your ideas as completely as possible, but avoid repeating the same information over and over again.**
8. **WRITE LEGIBLY!** Answers that cannot be read may not receive all of the points they deserve.
9. **Define all terms.** You will not receive points for lists of terms which are not explained. For example, in the 1994 question on factors that affect the gene pool, list mutations, gene flow, genetic drift, natural selection, and nonrandom mating earned no points. However, a definition of each factor or demonstration of an understanding of the factor did earn a point. Specific terms usually are not as important as demonstrating that you understand the idea; it’s the explanation that count... avoid using “buzz words”
10. **Cite examples of major concepts.** In the example given above, students received points for defining a nucleotide sequence as a mechanism for change in the gene pool. Giving an example of a substitution earned an additional point.
11. **Label all diagrams**. Since you must still discuss the contents of the diagram in your text and cannot receive points for the diagram alone, a diagram may not be worth the time it takes to draw and label it. If you do draw a diagram, however, be sure to refer to it in your text.
12. **Follow all instructions in the question carefully!** If a question instructs you to choose three out of five topics to discuss, you will be evaluated on only the *first* three that you discuss no matter how complete your fourth or fifth answer is.
13. **Don’t erase or mark out large sections of essay if you make a false start on a question.** If you decide at some point that you have misinterpreted the question, simply state that fact and begin again. You may have earned some points in your first answer for which you should earn credit. Credit cannot be given for erased or marked-out material.
14. **In general, you are not penalized points for wrong information unless you contradict a correct point for which you received credit.** Attempt an answer to every question or part of a question. A blank paper earns no points; answering part of the question will help you to earn partial points.
15. **One question on the test may test your understanding of how several topics from different parts of the course support a particular theme.** Look for the common thread and answer each part of the question with respect to how that topic supports the theme. Be sure to read the stem of the question carefully so that you know what the common theme is.
16. **Use paragraphs.** Reading page after page of continuous writing is tiring and boring. Give the reader a break by using proper punctuation.
17. **Answer each question on the page where the question is located** to make it easy for the reader to find each of your answers. Answering more than one question per section can make finding all of your answers a challenge.
18. **Pace yourself!** Look at the clock at the beginning of the essay portion. Plan to spend the appropriate amount of time on the free-response questions. Stop writing when your time is up. You can always come back to the question if you finish early. Taking your own watch to the exam is a good idea!