

2025



AP[®] World History: Modern

Sample Student Responses and Scoring Commentary Set 1

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Long Essay Question 4

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Question 4: Long Essay Question, Discoveries and Benefits to Individuals/Societies

6 points

General Scoring Notes

- Except where otherwise noted, each point of these rubrics is earned independently; for example, a student could earn a point for evidence without earning a point for thesis/claim.
- **Accuracy:** The components of these rubrics require that students demonstrate historically defensible content knowledge. Given the timed nature of the exam, essays may contain errors that do not detract from their overall quality, as long as the historical content used to advance the argument is accurate.
- **Clarity:** Exam essays should be considered first drafts and thus may contain grammatical errors. Those errors will not be counted against a student unless they obscure the successful demonstration of the content knowledge, skills, and practices described below.

During the twentieth century, medical and scientific discoveries affected life expectancies, access to resources, and social and economic structures, which reshaped individual lives as well as entire societies.

Develop an argument that evaluates the extent to which medical and scientific discoveries benefited individuals and/or societies during this period.

Reporting Category	Scoring Criteria	
<p>Row A Thesis/Claim (0–1 points)</p>	<p>0 points Does not meet the criteria for one point.</p>	<p>1 point Responds to the prompt with a historically defensible thesis/claim that establishes a line of reasoning.</p>
Decision Rules and Scoring Notes		
<p>Responses that do not earn this point:</p> <ul style="list-style-type: none"> • Are not historically defensible. • Only restate or rephrase the prompt. • Do not respond to the prompt. • Do not establish a line of reasoning. • Are overgeneralized. 		<p>Responses that earn this point:</p> <ul style="list-style-type: none"> • Provide a historically defensible thesis or claim about the extent to which medical and scientific discoveries benefited individuals and/or societies during the twentieth century. The thesis or claim must either provide some indication of the reason for making that claim OR establish categories of the argument.
<p>Examples that do not earn this point:</p> <p>Provide a restatement of the prompt</p> <ul style="list-style-type: none"> • <i>“Medical and scientific discoveries benefitted individuals during the twentieth century.”</i> <p>Provide a historically defensible claim, but do not establish a line of reasoning</p> <ul style="list-style-type: none"> • <i>“Medical innovations such as vaccines were developed in the twentieth century.”</i> <p>Does not respond to the prompt</p> <ul style="list-style-type: none"> • <i>“The introduction of railroads during the Industrial Revolution changed society dramatically.”</i> 		<p>Examples that earn this point:</p> <p>Establish a line of reasoning that evaluates the topic of the prompt</p> <ul style="list-style-type: none"> • <i>“The invention and widespread use of antibiotics lowered mortality rates from infectious diseases and injuries contributing to population growth and longer life expectancies.”</i> <p>Establish a line of reasoning that evaluates the topic of the prompt with analytic categories</p> <ul style="list-style-type: none"> • <i>“The Green Revolution and other commercial agricultural innovations contributed to the widening of inequalities between developing and developed countries; however, these innovations also contributed to improved nutrition and population growth.”</i> <p>Establish a line of reasoning</p> <ul style="list-style-type: none"> • <i>“All in all, medical and scientific discoveries benefited individuals and/or societies during the 20th century due to the existence of vaccines.”</i> [Minimally acceptable thesis/claim]
<p>Additional Notes:</p> <ul style="list-style-type: none"> • The thesis or claim must consist of one or more sentences located in one place, either in the introduction or the conclusion (which may not be limited to the first or last paragraphs). • The thesis or claim must identify a relevant development(s) in the period, although it is not required to encompass the entire period. 		

Reporting Category	Scoring Criteria	
Row B Contextualization	0 points Does not meet the criteria for one point.	1 point Describes a broader historical context relevant to the prompt.
(0–1 points)	Decision Rules and Scoring Notes	
	<p>Responses that do not earn this point:</p> <ul style="list-style-type: none"> • Provide an overgeneralized statement about the time period referenced in the prompt. • Provide context that is not relevant to the prompt. • Provide a passing phrase or reference. <p>Examples that do not earn this point:</p> <p>Do not provide context relevant to the topic of the prompt</p> <ul style="list-style-type: none"> • <i>“Industrialization led to the emergence of new social classes and the rapid expansion of cities, as workers flocked to the locations of the new factories.”</i> <p>Provide a passing phrase or reference</p> <ul style="list-style-type: none"> • <i>“The Green Revolution began as World War II ended.”</i> 	<p>Responses that earn this point:</p> <ul style="list-style-type: none"> • Accurately describe a context relevant to medical or scientific discoveries during the twentieth century. <p>Examples of relevant context that earn this point include the following, if appropriate elaboration is provided:</p> <ul style="list-style-type: none"> • Advances in biosciences such as evolutionary biology or modern chemistry • Industrialization • Energy technologies, including the use of petroleum and natural gas • Environmental catastrophes • Chemically and genetically modified forms of agriculture • The Green Revolution • Globalization • Growing international institutions • Large scale migrations • Women’s rights and access to education and professional opportunities • New modes of transportation [air travel and shipping containers] <p>Example of acceptable contextualization:</p> <ul style="list-style-type: none"> • <i>“The use of natural gas and petroleum allowed for advances in technology and transportation but led to greater emissions of greenhouse gasses, causing environmental concerns.”</i> • <i>“Health care in many societies was affected by industrialization and urbanization.”</i> [Minimally acceptable contextualization]
	<p>Additional Notes:</p> <ul style="list-style-type: none"> • The response must describe broader historical events, developments, or processes that occur before, during, or continue after the time frame of the question that are relevant to the topic of the prompt. • To earn this point, the context provided must be more than a phrase or reference. 	

Reporting Category	Scoring Criteria					
<p>Row C Evidence (0–2 points)</p>	<p>0 points Does not meet the criteria for one point.</p>	<p>1 point Provides specific examples of at least two pieces of evidence relevant to the topic of the prompt.</p>	<p>2 points Supports an argument in response to the prompt using at least two pieces of specific and relevant evidence.</p>			
Decision Rules and Scoring Notes						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top; padding: 5px;"> <p>Responses that do not earn points:</p> <ul style="list-style-type: none"> • Identify a single piece of evidence. • Provide evidence that is not relevant to the topic of the prompt. • Provide evidence that is outside the time period or region specified in the prompt. • Repeat information that is specified in the prompt. <p>Examples that do not earn points:</p> <p>Provide evidence that is outside the time period</p> <ul style="list-style-type: none"> • <i>“An early form of smallpox vaccination was used in the Ottoman empire, from where it spread to Europe.”</i> </td> <td style="width: 33%; vertical-align: top; padding: 5px;"> <p>Responses that earn 1 point:</p> <ul style="list-style-type: none"> • Identify at least two specific historical examples relevant to medical or scientific discoveries during the twentieth century. <p>Examples of evidence that are specific and relevant include the following (two examples required):</p> <ul style="list-style-type: none"> • Antibiotics • Vaccines • Birth control • Population growth • Infectious diseases and new epidemics • Diseases associated with longevity, such as cardiovascular disease • Anti-Globalist movement • Debates for and against nuclear power • Knowledge economies vs industrial production • Stem cell research <p>Example of a statement that earns one point for evidence:</p> <ul style="list-style-type: none"> • <i>“Discoveries in communication technologies, for example the invention of the microchip, led to an expansion in the number of personal computers eventually leading to the creation of the internet in the twentieth century.”</i> </td> <td style="width: 33%; vertical-align: top; padding: 5px;"> <p>Responses that earn 2 points:</p> <ul style="list-style-type: none"> • Use at least two specific historical examples to support an argument regarding how medical or scientific discoveries benefited individuals and/or societies during the twentieth century. <p>Examples that successfully support an argument with evidence:</p> <ul style="list-style-type: none"> • <i>“Improved understanding of the bacterial or viral origins of many infectious diseases and the development of antibiotics, such as penicillin, in the twentieth century transformed medicine and greatly improved both individual lives and public health, as many previously fatal infectious diseases could now be cured or managed successfully.”</i> [Uses evidence to support an argument about the benefits of the invention of antibiotics to individuals and society] • <i>“The use of chemical fertilizers and genetically modified crops as part of the Green Revolution increased crop yields and helped secure the food supply for many developing nations, ultimately leading to longer life expectancies and improved quality of life for hundreds of millions of people.”</i> [Uses evidence to support an argument about new agricultural technologies benefiting society through increased crop yields] </td> </tr> </table>				<p>Responses that do not earn points:</p> <ul style="list-style-type: none"> • Identify a single piece of evidence. • Provide evidence that is not relevant to the topic of the prompt. • Provide evidence that is outside the time period or region specified in the prompt. • Repeat information that is specified in the prompt. <p>Examples that do not earn points:</p> <p>Provide evidence that is outside the time period</p> <ul style="list-style-type: none"> • <i>“An early form of smallpox vaccination was used in the Ottoman empire, from where it spread to Europe.”</i> 	<p>Responses that earn 1 point:</p> <ul style="list-style-type: none"> • Identify at least two specific historical examples relevant to medical or scientific discoveries during the twentieth century. <p>Examples of evidence that are specific and relevant include the following (two examples required):</p> <ul style="list-style-type: none"> • Antibiotics • Vaccines • Birth control • Population growth • Infectious diseases and new epidemics • Diseases associated with longevity, such as cardiovascular disease • Anti-Globalist movement • Debates for and against nuclear power • Knowledge economies vs industrial production • Stem cell research <p>Example of a statement that earns one point for evidence:</p> <ul style="list-style-type: none"> • <i>“Discoveries in communication technologies, for example the invention of the microchip, led to an expansion in the number of personal computers eventually leading to the creation of the internet in the twentieth century.”</i> 	<p>Responses that earn 2 points:</p> <ul style="list-style-type: none"> • Use at least two specific historical examples to support an argument regarding how medical or scientific discoveries benefited individuals and/or societies during the twentieth century. <p>Examples that successfully support an argument with evidence:</p> <ul style="list-style-type: none"> • <i>“Improved understanding of the bacterial or viral origins of many infectious diseases and the development of antibiotics, such as penicillin, in the twentieth century transformed medicine and greatly improved both individual lives and public health, as many previously fatal infectious diseases could now be cured or managed successfully.”</i> [Uses evidence to support an argument about the benefits of the invention of antibiotics to individuals and society] • <i>“The use of chemical fertilizers and genetically modified crops as part of the Green Revolution increased crop yields and helped secure the food supply for many developing nations, ultimately leading to longer life expectancies and improved quality of life for hundreds of millions of people.”</i> [Uses evidence to support an argument about new agricultural technologies benefiting society through increased crop yields]
<p>Responses that do not earn points:</p> <ul style="list-style-type: none"> • Identify a single piece of evidence. • Provide evidence that is not relevant to the topic of the prompt. • Provide evidence that is outside the time period or region specified in the prompt. • Repeat information that is specified in the prompt. <p>Examples that do not earn points:</p> <p>Provide evidence that is outside the time period</p> <ul style="list-style-type: none"> • <i>“An early form of smallpox vaccination was used in the Ottoman empire, from where it spread to Europe.”</i> 	<p>Responses that earn 1 point:</p> <ul style="list-style-type: none"> • Identify at least two specific historical examples relevant to medical or scientific discoveries during the twentieth century. <p>Examples of evidence that are specific and relevant include the following (two examples required):</p> <ul style="list-style-type: none"> • Antibiotics • Vaccines • Birth control • Population growth • Infectious diseases and new epidemics • Diseases associated with longevity, such as cardiovascular disease • Anti-Globalist movement • Debates for and against nuclear power • Knowledge economies vs industrial production • Stem cell research <p>Example of a statement that earns one point for evidence:</p> <ul style="list-style-type: none"> • <i>“Discoveries in communication technologies, for example the invention of the microchip, led to an expansion in the number of personal computers eventually leading to the creation of the internet in the twentieth century.”</i> 	<p>Responses that earn 2 points:</p> <ul style="list-style-type: none"> • Use at least two specific historical examples to support an argument regarding how medical or scientific discoveries benefited individuals and/or societies during the twentieth century. <p>Examples that successfully support an argument with evidence:</p> <ul style="list-style-type: none"> • <i>“Improved understanding of the bacterial or viral origins of many infectious diseases and the development of antibiotics, such as penicillin, in the twentieth century transformed medicine and greatly improved both individual lives and public health, as many previously fatal infectious diseases could now be cured or managed successfully.”</i> [Uses evidence to support an argument about the benefits of the invention of antibiotics to individuals and society] • <i>“The use of chemical fertilizers and genetically modified crops as part of the Green Revolution increased crop yields and helped secure the food supply for many developing nations, ultimately leading to longer life expectancies and improved quality of life for hundreds of millions of people.”</i> [Uses evidence to support an argument about new agricultural technologies benefiting society through increased crop yields] 				
<p>Additional Notes:</p> <ul style="list-style-type: none"> • Typically, statements credited as evidence will be more specific than statements credited as contextualization. • If a response has a multipart argument, then it can meet the threshold of two pieces of evidence by giving one example for one part of the argument and another example for a different part of the argument, but the total number of examples must still be at least two. 						

Reporting Category	Scoring Criteria		
<p>Row D Analysis and Reasoning Complex Understanding</p>	<p>0 points Does not meet the criteria for one point.</p>	<p>1 point Uses historical reasoning [e.g. comparison, causation, continuity and change] to frame or structure an argument that addresses the prompt.</p>	<p>2 points Demonstrates a complex understanding of the historical development that is the focus of the prompt through sophisticated argumentation and/or effective use of evidence.</p>
Decision Rules and Scoring Notes			
<p>(0–2 points)</p>	<p>Responses that do not earn points:</p> <ul style="list-style-type: none"> May include evidence but offer no reasoning to connect the evidence to an argument. May assert the use of historical reasoning but does not use it to frame or structure an argument. 	<p>Responses that earn 1 point:</p> <ul style="list-style-type: none"> Must demonstrate the use of historical reasoning to frame or structure an argument about the extent to which medical and scientific discoveries benefited individuals and/or societies during the twentieth century. The reasoning might be uneven or imbalanced, or the evidence may be overly general or lacking specificity. 	<p>Responses that earn 2 points:</p> <p>May demonstrate a complex understanding through sophisticated argumentation that is relevant to the prompt. This may be done in a variety of ways, such as:</p> <ul style="list-style-type: none"> Explaining multiple themes or perspectives to explore complexity or nuance; OR Explaining multiple causes or effects, multiple similarities or differences, or multiple continuities or changes; OR Explaining both cause and effect, both similarity and difference, or both continuity and change; OR Explaining relevant and insightful connections within and across periods or geographical areas. These connections should clearly relate to an argument that responds to the prompt. <p>May demonstrate a complex understanding through effective use of evidence relevant to an argument that addresses the prompt. This may be done in a variety of ways that might include:</p> <ul style="list-style-type: none"> Explaining how multiple pieces of specific and relevant evidence [at least four] support a nuanced or complex argument that responds to the prompt; OR Using evidence effectively to demonstrate a sophisticated understanding of different perspectives relevant to the prompt.
	<p>Examples that do not earn points:</p> <p>Provide evidence but offer no reasoning to connect the evidence to an argument</p> <ul style="list-style-type: none"> <i>“Stem cell research began in the 1980s.”</i> 	<p>Using a historical reasoning process to frame or structure an argument could include:</p> <ul style="list-style-type: none"> Explaining how improvements in sanitation and urban planning significantly reduced deaths from infectious diseases like cholera or typhoid, which improved people’s lives and led to significant population growth. Explaining how the creation of cellular communications technology provided individuals all over the world with fast, direct communications, which led to more entrepreneurship and social bonds. 	<p>Demonstrating a complex understanding might include any of the following, if appropriate elaboration is provided:</p> <ul style="list-style-type: none"> Explaining how multiple pieces of specific and relevant evidence support a nuanced argument about the prompt. For example, explaining how the development of nuclear power through the invention of the nuclear reactor has provided an important new source of energy and therefore encouraged economic growth, but has also introduced new risks including long-term disposal of nuclear waste, possible radiation from nuclear accidents like Three Mile Island or Chernobyl, as well as the threat of nuclear proliferation as more and more states used their use their civilian nuclear programs to develop weapons-grade nuclear materials for nuclear bombs. [Explains how at least four pieces of evidence support a nuanced or complex argument]

		<p>Example of acceptable use of historical reasoning:</p> <ul style="list-style-type: none"> • <i>“International organizations like the United Nations and the World Health Organization attempted to spread the benefits of innovations in medicine and public health in developing countries, which reduced deaths due to communicable diseases in many regions.”</i> [Indicates an effect of technological changes and international institutions on individuals in developing countries] 	<ul style="list-style-type: none"> • Considering how new communications technologies like the internet and satellites informed many people about global issues related to human rights or inequality, while at the same time sparking protest movements against globalization or the influence of Western or American culture. [Explains nuance by exploring multiple perspectives] • Explaining how some medical and scientific advances in the twentieth century, such as the invention of antibiotics or the Green Revolution occurred in response to pressing medical, economic, or political crises [for example devastating epidemics, frequent famines and rampant food insecurity due to rapid population increases, etc.] and how, while helping resolve those crises, the medical and scientific advances in question created new problems, for example crop monocultures with negative environmental effects, antibiotic resistant bacteria, the emergence of new chronic diseases associated with processed foods and sedentary lifestyles, etc. [Explains nuance, considers both causes and effects]
<p>Additional Notes:</p> <ul style="list-style-type: none"> • To earn the first point for analysis and reasoning, the response must use historical reasoning to structure a response to the prompt, although the reasoning might be uneven or imbalanced, or the evidence may be overly general or lacking in specificity. • This complex understanding must be part of the argument and may be demonstrated in any part of the response. • While it is not necessary for this complex understanding to be woven throughout the response, it must be more than merely a phrase or reference. 			

During the twentieth century, industrialization and world wars caused increased cultural exchange and interaction between many societies. The desire for mass produced products and new technologies to facilitate communication, as a result from industrialization, paved the way for increased cultural exchange. As a result, cultural exchange and interaction led to various developments in medicine such as antibiotics, vaccines, and birth control, along with scientific discoveries such as genetic engineering that would have overwhelmingly positive effects on individual lives in many societies in the world.

The first way in which medical and scientific discoveries benefited individuals or societies was through the development of antibiotics, vaccines, and birth control. For instance, antibiotics such as penicillin discovered by Alexander Fleming in 1928, would have a significant impact on treating disease such as tuberculosis. In previous decades, tuberculosis was an untreatable disease and associated with poverty. Fortunately, tuberculosis can be treated through rest and prescribed doses of antibiotics. This significantly reduced the rate of death due to tuberculosis, which is an extremely important impact on societies, especially more poorer societies that can get access to antibiotics as a result of increased global interaction. Vaccines are another example of medicine that had significant impacts on societies, as it has prevented millions of deaths. One specific instance is the development of the injected Polio vaccine by James Polk in the 1960s. The vaccine was developed using the dead polio virus. Before the injected vaccine was introduced, Polio was a rampant disease in the world. Children were often the victims of Polio, but the development of the Polio vaccine saved many lives. Additionally, an oral Polio vaccine was developed by Albert Sabin using a live virus, which was less effective but popular in many countries in Africa that were unable to afford the injected vaccine. Lastly, birth control was another medicine that would be impactful on the role of women. Birth control gave women greater autonomy over themselves and their reproductive health. Overall, this would cause women to have less children than previous generations. In addition, many women from previous centuries did not have much reproductive autonomy. Thus, these two developments prove to be impactful on the gender roles of women, which changed as a result of birth control.

The second way in which medical and scientific discoveries benefited individuals and societies was through the discovery of genetic engineering, the modification of plants, which was the basis for the Green Revolution. The Green Revolution started in countries such as India where crops were selectively bred and genetically modified, so that they could resist pests and drought. The Green Revolution led to more productive crops, which meant that there would be more food to feed the population. As a result of the increase of food, populations and life expectancy increased. Although this led to the continuous decrease in farmers, it positively impacted more people, as they could live longer.

In conclusion, many significant medical and scientific discoveries significantly benefited individuals and societies. These include the development of antibiotics, vaccines, birth control, and ways to increase agricultural production. Through increased connection between different countries, these medicines and scientific technologies were able to spread and benefit many societies through improved life expectancy, autonomy, and health.

During the twentieth century, many medical and scientific discoveries occurred. Throughout the twentieth century new diseases, technology, and food were introduced. Throughout the 1900s many suffered from various diseases that had no vaccines. But later on, because of medical and scientific discoveries, vaccines were produced. Medical and scientific discoveries were able to benefit societies and individuals during this time period through new treatment and better food.

One way medical and scientific discoveries were able to benefit societies was through food. During the twentieth century, the Green Revolution happened. Scientists were able to make new strands of food, increasing harvests. Because they were able to increase harvests, people's diets became better. Since people's diets were better, people became healthier and lived longer. Examples of this can be seen in many countries when the Green Revolution occurred. People's health improved, causing them to live longer, and then because of this, population grew. This can especially be seen in countries such as India where the population skyrocketed.

Another way medical and scientific discoveries were able to improve societies was through new medicine and vaccines. Many vaccines were created to create immunity against many diseases. Some of these diseases include polio and AIDS. The development of these vaccines did help countries economically, as they were able to gain money from people paying for the vaccine. Although this advancement did help societies, it mainly only helped western countries, in comparison Asian and African countries did not have the means to afford vaccines for their people. However even though vaccines and the Green Revolution greatly benefitted countries, since people were living longer, new diseases such as heart disease and Alzheimers developed.

To conclude, many nations benefitted from scientific and medical developments such as new and better food and vaccines.

Medical and scientific discoveries benefited individuals and societies during this period by expanding life expectancies and social and economic structures.

Medical and scientific discoveries helped expand the human life expectancies for the greater good. Before medical advancements were pursued, many humans experienced death at an early age. A large amount of diseases were not yet discovered but as migration continued studies began to be made to help uncover disease. Also with the help of new technologies humans were able to create different cures and medicine that overcame sickness and allowed the human body to become healthy again.

Medical and scientific discoveries allowed society to gain access to resources that would help the human life. As technology advanced medical professionals gained access to new medical practices that proved to be effective. This allowed natural herbs to be saved to be used to make medicines, tea, and vitamins that helped extend human life.

In conclusion, medical and scientific discoveries benefited individuals and societies during the twentieth century by expanding human life expectancy and gaining access to resources.

Long Essay Question 4

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

NEW for 2025: The question overviews can be found in the *Chief Reader Report on Student Responses on AP Central*.

Sample: 4A

Thesis Score: 1

Contextualization Score: 1

Evidence Score: 2

Analysis and Reasoning Score: 2

Total Score: 6

Thesis/Claim (0–1 points): 1

The response earned 1 point for thesis by providing a historically defensible claim and a line of reasoning regarding the extent to which medical or scientific discoveries benefited individuals or societies. The thesis, located in the first paragraph, states that “cultural exchange and interaction led to various developments in medicine such as antibiotics, vaccines, and birth control, along with scientific discoveries such as genetic engineering that would have overwhelmingly positive effects on individual lives in many societies in the world.” This is restated in the last paragraph, with the added claim that medical and scientific discoveries benefited societies “through improved life expectancy, autonomy, and health.”

Contextualization (0–1 points): 1

The response earned 1 point for contextualization. At the beginning of the first paragraph, the response situates the topic of the prompt in the broader historical context of industrialization, the world wars, and a “desire for mass produced products.”

Evidence (0–2 points): 2

The response earned 1 point for using evidence. The response identifies multiple pieces of evidence relevant to the prompt, including penicillin, tuberculosis, vaccines in general, the polio vaccine in particular, birth control, the Green Revolution, and genetically modified crops. Much of this evidence is presented in detail, rather than just mentioned. For example, the response not only mentions the discovery of penicillin, but also correctly identifies its discoverer (Alexander Fleming) and the date of the discovery (1928). In the case of the polio vaccine, the response presents detailed evidence about the development of both the “dead” virus vaccine and the live virus vaccine, only misidentifying Jonas Salk as James Polk.

Long Essay Question 4 (continued)

The response earned 1 point for supporting an argument with evidence. In the second paragraph, the response makes the argument that medical and scientific discoveries benefited individuals or societies “through the development of antibiotics, vaccines, and birth control” and supports it with extensive evidence about the development and effects of penicillin, the development and effects both the Salk and the Sabin types of polio vaccines, and the development of birth control and its effects on the lives of women. In the third paragraph, the response makes the argument that medical and scientific discoveries benefited individuals and societies “through the discovery of genetic engineering, the modification of plants” and supports that argument with the evidence of the Green Revolution and its effects in creating pest- and drought-resistant crops strains, which led to an increase in populations and longer life-expectancies.

Analysis and Reasoning (0–2 points): 2

The response earned 1 point for historical reasoning. The response consistently uses historical reasoning to frame or structure the arguments that are being developed. The response uses the historical reasoning practice of causation to explain multiple causal connections between medical and scientific discoveries and their impact on the lives of individuals in the twentieth century. For example, the response explains that the Green Revolution led to more drought resistant crops, which led to demographic increases, but also to a “continuous decrease in farmers.” The response also uses the historical reasoning practice of comparison to explain the difference between the more effective injectable polio vaccine using dead virus compared to the oral vaccine made using live viruses that was less effective, but also less expensive and therefore more widely available.

The response earned 1 point for complex understanding. The response provides a nuanced discussion of medical advances with several highly specific pieces of evidence, all of which are fully explained and connected to the main argument. The response further provides additional nuanced discussion of the causation in the third paragraph discussing the Green Revolution and how it caused population growth and increased life expectancy, while leading to other social changes such as a decreasing number of farmers.

Long Essay Question 4 (continued)**Sample: 4B****Thesis Score: 1****Contextualization Score: 0****Evidence Score: 2****Analysis and Reasoning Score: 1****Total Score: 4****Thesis/Claim (0–1 points): 1**

The response earned 1 point for thesis by providing a historically defensible claim and a line of reasoning regarding the extent to which medical or scientific discoveries benefited individuals or societies. The thesis, found in the first paragraph, states, “Medical and scientific discoveries were able to benefit societies and individuals during this time period through new treatment and better food.” While the line of reasoning is quite generic, it was enough to earn the point. The response also restates the thesis in the last sentence.

Contextualization (0–1 points): 0

The response did not earn the point for contextualization. There is no attempt to situate the topic of the prompt within a broader historical context.

Evidence (0–2 points): 2

The response earned 1 point for using evidence. The response provides several pieces of evidence related to medical and scientific discoveries in the twentieth century or their effect on individuals and societies, discussing the Green Revolution and population growth in India in the second paragraph and vaccines and diseases (polio, AIDS, and Alzheimer’s) in the third paragraph.

The response earned 1 point for supporting an argument with evidence. In the second paragraph, the response makes the argument that “medical and scientific discoveries were able to benefit societies was through food” and supports that argument with evidence concerning the effects of the Green Revolution both on individuals (noting health benefits through better diet and longer lifespans) and on societies (noting demographic growth “in countries such as India where the population skyrocketed.” In the third paragraph, the response makes the argument that “medical and scientific discoveries were able to improve societies ... through new medicine and vaccines” and supports that argument with evidence about the effect of such vaccines, noting that, unlike Western countries, “Asian and African countries did not have the means to afford vaccines for their people.” Although the response’s argument that vaccines helped countries economically “as they were able to gain money from people paying for the vaccine” is not historically accurate, the response’s discussion of disparities in terms of access to vaccines between Western countries and non-Western countries does provide relevant evidence in support of argument about the prompt.

Long Essay Question 4 (continued)**Analysis and Reasoning (0–2 points): 1**

The response earned 1 point for historical reasoning. The response uses historical reasoning practices to frame or structure its argument throughout, using the historical reasoning practice of causation to explain multiple effects of medical and scientific discoveries in the twentieth century, noting, for example, that, because of the Green Revolution, “Peoples health improved, causing them to live longer, and then because of this, population grew,” but at the same time, these longer lifespans meant that “new diseases such as heart disease and alzheimers developed.” The response also uses the historical reasoning practice of comparison to highlight differences in the access to vaccines between Western and non-Western society.

The response did not earn the point for complex understanding. While the discussion of unequal access to vaccines in the third paragraph did indicate an attempt to demonstrate a complex understanding of the effect of medical and scientific discoveries on the lives of individuals and on societies in the twentieth century, this attempt was not enough to earn the point and there are no other attempts to develop a complex or nuanced argument or to demonstrate a complex understanding through sophisticated analysis and/or effective use of evidence.

Sample: 4C**Thesis Score: 1****Contextualization Score: 0****Evidence Score: 0****Analysis and Reasoning Score: 0****Total Score: 1****Thesis/Claim (0–1 points): 1**

The response earned 1 point for thesis by providing a historically defensible claim and a line of reasoning regarding the extent to which medical or scientific discoveries benefited individuals or societies. The thesis, found in the first paragraph, states that “Medical and scientific discoveries benefited individuals and societies during this period by expanding life expectancies.” The line of reasoning about expanding life expectancy was sufficient to make this statement a minimally acceptable thesis.

Contextualization (0–1 points): 0

The response did not earn the point for contextualization. In the second paragraph, the response attempts to situate the topic of the prompt within a broader historical context, stating that “Before medical advancements were pursued, many humans experienced death at an early age,” but this attempt is not successful.

Long Essay Question 4 (continued)**Evidence (0–2 points): 0**

The response did not earn the point for using evidence. In the third paragraph, the response discusses “natural herbs” being “saved to be used to make medicines” as well as “tea, and vitamins that helped extend human life” but it is not clear what new technology is being addressed in that statement. The discussion of medicines and teas in the same statement falls outside the time period and provides no specific examples. The discussion of medicines in the second paragraph does not provide specific examples of sicknesses or medicine.

The response did not earn the point for supporting an argument with evidence. The response attempts an argument by stating “This allowed natural herbs to be saved to be used to make medicines, tea, and vitamins that helped extend human life,” but this statement was not specific enough to earn the point. The other attempts to support an argument using medicine and tea fall outside the time period and provide no specific examples from within the period of the prompt.

Analysis and Reasoning: (0–2 points): 0

The response did not earn the point for historical reasoning. The response does not use comparison, causation, or continuity and change over time to frame or structure an argument.

The response did not earn the point for complex understanding. There is no attempt to develop a complex or nuanced argument or to demonstrate a complex understanding through sophisticated analysis and/or effective use of evidence.