

# Instructor's Manual and Online Resources

Exploring Philosophy: An Introductory Anthology

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# Introduction to Online Resources

Welcome to Oxford's *Exploring Philosophy*, 6th Edition! Here you will find various resources to assist you.

In the *Instructor's Manual* you will find:

*Summaries of every reading* for main ideas and argumentative structure, available in Word format.

*Essay questions* for each reading in the work.

*Multiple choice* and *true/false* questions for each part, covering every reading (half of which, indicated by asterisk, are included in student self-quizzes in the *Student Resources* section of the companion website).

*Weblinks* for each part.

*Glossary of key terms* from all of the readings in the book.

Also for instructors are *PowerPoint lecture slides* covering the main ideas of each part of the book.

In the *Student Resources* you will find:

*Essay questions* for each reading in the work.

*Self-quizzes* for each part and for every reading in the book.

*Glossary of key terms* from all of the readings in the book.

## Part 1: Introduction

### What Is Philosophy?

Monroe C. Beardsley and Elizabeth Lane Beardsley

#### *Reading Summary*

The questions of philosophy do not pertain to a distinctive subject matter; rather, they are arrived at by means of a distinctive procedure: critical examination of one's ordinary beliefs. This procedure involves searching for reasons that justify one's beliefs, reasons to think they are true. Upon further questioning, many of our ordinary beliefs (e.g., that some criminals are responsible for their actions) are seen to rely on general assumptions (e.g., that human beings have free will). These assumptions are *philosophical beliefs*. To ask a *philosophical question* is to request reasons to think a philosophical belief is true. Philosophical questions are highly general, concerning broad classes of things. They are also highly fundamental, concerning the truth of beliefs that support many other beliefs. To explore a philosophical belief's logical connections with other beliefs or to examine the reasons to think it is true is to engage in *philosophical thinking*. Philosophical thinking results from a pattern of questioning that moves from the more specific and common sense to the more general and fundamental. The study of philosophy develops the intellectual virtues of clarity, reasonableness, and consistency. Insofar as philosophical beliefs influence action, the study of philosophy may also help one to live a better life.

#### *Weblinks*

"Philosophy for Children," Michael Pritchard

<http://plato.stanford.edu/entries/children/>

"What Is Philosophy?" Bob Zunjic

<http://www.uri.edu/personal/szunjic/philos/whystudy.htm/>

### The Value of Philosophy

Bertrand Russell

#### *Reading Summary*

What is the value of philosophy? Many scientists and "practical" people think it is useless and trivial. But they have the wrong conception of what is important in life and what the goods of philosophy are. The practical person is concerned only with what is good for the body, not also with what is good for the mind. The value of philosophy is among the goods of the mind. The scientist seeks knowledge in the form of definite answers to questions that are of value to humanity generally. But philosophy is good for those who study it and only indirectly good for the public. And the questions that concern philosophy do not admit of definite answers. When they do, they become a part of science and no longer a part of philosophy. Some questions that cannot be demonstrably

answered are still valuable to ask. And there is value in the uncertainty inherent in the study of philosophy. It enlarges the range of possibilities we can think and frees us from the grip of our customary beliefs and prejudices. The chief value of philosophy is in contemplating great questions free from the confines of one's personal aims. It is for the sake of these questions themselves that philosophy should be studied.

### ***Weblinks***

“Why Study Philosophy?”

<http://philosophy.louisiana.edu/why.html/>

“Hey—Become a Philosophy Major, Already!” Manuel Vargas (homepage)

<http://www.usfca.edu/fac-staff/mrvargas/home.htm/>

## **Defence of Socrates**

Plato

### ***Reading Summary***

Socrates was tried and sentenced to death for being impious and corrupting the youth. His speech at the trial is an eloquent defense of his own life and of philosophy. Socrates considers two sets of charges, arguing that both sets of charges are false and that the first lends credence to the second. His long-time reputation as a teacher-for-hire concerned with gaining knowledge of heavenly bodies and giving instruction on argumentative strategy, the first set of charges, has led many to believe that he corrupts the young and fails to acknowledge the gods, the second set of charges. Socrates admits that his vocation, the examination of supposedly wise men, has made him many enemies. But the fault lies with those angry with him because he has shown that they are ignorant when they profess to be wise. His examination of Meletus provides an example of his method. His mission is to understand the meaning of the oracle's declaration that no one is wiser than Socrates. The best sense he can make of it is that he alone among men does not profess wisdom when he does not have any. That his is a divine mission and that he obeys a divine sign that warns him when he is about to go astray show that he is not impious. He obviously believes in gods. In fact, he thinks that he has been sent by a god to wake Athens from its complacent slumber. That he associates with those he is supposed to be corrupting shows that he does not intentionally corrupt them. Otherwise, he would be intentionally doing himself harm, which is impossible. Socrates maintains that a man of self-respect considers justice alone. This is why he has not performed and supplicated before the jury, but rather he has tried to inform and persuade the jury of why the charges are false. Socrates also has some interesting things to say about death. To fear death is to think one knows something that one does not because no living person knows what the afterlife is like. In fact, he is hopeful that death is good. He supposes it is either a long, deep sleep or an opportunity for eternal conversation with great people of the past. Thus, Socrates is not afraid of the death penalty the jury proposes. His counteroffer is that he be given free meals for life and allowed to continue his service to the city he loves. He is aware that the jury is not likely to accept the offer and submits to its judgment.

Socrates closes with an expression of ignorance as to whose destiny is better: his in death or the jury's in life.

***Weblinks***

“Socrates,” Debra Nails

<http://plato.stanford.edu/entries/socrates/>

Aristophanes's plays

<http://classics.mit.edu/Aristophanes/>

# Part 1 Questions: Introduction

## What Is Philosophy?

Monroe C. Beardsley and Elizabeth Lane Beardsley

### *Essay Questions for Test Bank*

1. Consider one of your ordinary beliefs. Now illustrate the Beardsleys' notion of philosophical questioning by examining this belief. What reasons do you have for thinking it to be true? What more fundamental beliefs underlie it? What philosophical questions are raised in the process?

A good essay will:

- State one of your ordinary beliefs clearly and succinctly.
- Provide several (more than one) supporting reasons for why you believe this statement to be true.
- Examine the more fundamental beliefs that must hold in order for your belief to be true.
- Examine several (more than one) philosophical questions that arise from holding your belief to be true.

2. Continue the line of questioning in either Dialogue I or Dialogue II by analyzing the meaning of a basic philosophical term.

3. Consider the example of contradictory fundamental beliefs, in the paragraph that begins "The third benefit which the study of philosophy can confer..." Explain why belief in free will conflicts with belief in causal laws of nature. Can you resolve the apparent conflict? If so, explain how. If not, explain why not.

### *Objective Questions*

True/False

- \*1. Philosophical questions are about a particular subject matter. (F)
- 2. One's ordinary beliefs are philosophical beliefs. (F)
- \*3. Philosophical beliefs support many of one's ordinary beliefs. (T)
- 4. A philosophical question is usually highly fundamental. (T)
- \*5. Philosophical questions are usually narrowly restricted in their focus. (F)
- 6. The study of philosophy can help one to develop a more consistent set of beliefs. (T)
- \*7. Philosophy is related to many other fields of study. (T)
- 8. A reasonable belief is logically justifiable. (T)
- \*9. All fundamental beliefs are reasonable. (F)
- 10. Philosophical thinking begins from ordinary beliefs. (T)

### *Multiple Choice*

- 1. Philosophical thinking is
  - \*a. About familiar topics.
  - b. About a highly specialized subject matter.

- c. Only for professional philosophers.
- d. Irrelevant to physics.

\*2. The study of philosophy is beneficial because

- a. It makes you popular.
- b. It is lucrative.
- \*c. It may help you act better.
- d. It shows you that you believe only true things.

3. A reasonable belief

- a. Is a belief for which a good reason can be given.
- b. Is logically justifiable.
- c. Has a better chance of being of being true than a belief that is not reasonable.
- \*d. All of the above.

\*4. Philosophical questions tend to be

- a. Highly fundamental.
- b. Highly specific.
- c. Highly generally.
- \*d. Both a and c.

5. To explore a belief is to

- a. Consider its truth.
- \*b. Assume its truth and consider its logical connections with other beliefs.
- c. Consider its popularity.
- d. Assume it is false and consider the impact on one's other beliefs.

\*6. To examine a belief is to

- \*a. Question whether it is based on good reasons.
- b. Rephrase it in clearer language.
- c. Look at it through a microscope.
- d. Ask a professional philosopher whether she believes it.

7. Which of the following is a basic philosophical term?

- a. Parents.
- b. Question.
- c. Pattern.
- \*d. Free will.

\*8. Which of the following is *not* a benefit of studying philosophy?

- a. Clarity.
- b. Reasonableness.
- \*c. Fame.
- d. Consistency.

9. A professional philosopher

- a. Charges for lessons in public speaking.
- \*b. Tries to answer broad, fundamental questions.
- c. Trains the physicist.
- d. Must have a beard.

\*10. Which of the following is a general rule for determining the generality and fundamentality of a belief?

- a. Many people hold this belief.
- b. It is a reasonable belief.
- c. There is no good reason one can give for holding this belief.
- \*d. There are no such rules.

### ***Essay Questions for Student Resources***

1. The Beardsleys claim at the beginning of their essay that a reasonable belief is more likely true than one that is not. Is this a philosophical belief? Explore its logical connections to other beliefs they seem to hold and examine what reasons there are to think it true or false. Do they provide any justification for this belief?
2. Write a dialogue of your own similar to Dialogues I and II. Then continue the line of questioning in your dialogue by analyzing a basic philosophical term.
3. Do the Beardsleys make a good case for the value of the study of philosophy? Explain.

## **The Value of Philosophy**

Bertrand Russell

### ***Essay Questions for Test Bank***

1. What sorts of questions concern philosophy, according to Russell, and why are they valuable ones to consider? Do you agree?  
A good essay will:
  - State several (more than one) questions that concern philosophy, according to Russell.
  - For each, describe clearly why Russell considers them valuable issues to ponder, both for philosophers and for the public at large.
  - Do you agree with Russell point of view? Would you add to or modify his list and definitions of issues that are of concern to philosophy?
2. Why does Russell think that the “practical” person has got things wrong about the value of philosophy? Do you agree?
3. Take a philosophical question considered somewhere else in this book and explain how it illustrates Russell’s view about the value of philosophy.



### ***Objective Questions***

True/False

1. Russell claims that philosophy is good for those who study it. (T)
- \*2. Russell claims that when a question has a definite answer it ceases to be a philosophical question and becomes a part of the sciences. (T)
3. Philosophy is similar to all other studies in that it aims primarily at knowledge. (T)
- \*4. Russell claims that there is value in uncertainty. (T)
5. On Russell's view, our personal aims are valuable because they restrict our pursuit of answers to philosophical questions. (F)
- \*6. Part of the value of philosophy, according to Russell, is breaking out of the confines of one's own cares. (T)
7. Perhaps the chief value of philosophy, according to Russell, is found in the greatness of the objects which it contemplates. (T)
- \*8. According to Russell, philosophy is to be studied for the sake of finding definite answers to one's questions. (F)
9. Philosophy, according to Russell, is to be studied for the sake of the questions themselves. (T)
- \*10. Philosophical questions, on Russell's view, enhance the dogmatic closure of the mind against speculation. (F)

### ***Multiple Choice***

1. According to Russell, philosophy is often misunderstood because of
  - a. A mistaken conception of the ends of life.
  - b. A mistaken conception of the goods philosophy strives to achieve.
  - c. A mistaken conception of the goods science strives to achieve.
  - \*d. Both a and b.
- \*2. According to Russell, when a question has a definite answer, it
  - a. Ceases to be a philosophical question.
  - b. Is uninteresting.
  - c. Becomes a scientific question.
  - \*d. Both a and c.
3. Russell claims that the "practical" person
  - a. Is really not practical.
  - b. Misses the value of the sciences.
  - \*c. Is concerned only with material goods.
  - d. All of the above.
- \*4. The chief value of philosophy, according to Russell, comes from
  - a. Its high-minded rhetoric.
  - b. Transcendence of the universe.
  - \*c. Contemplation of great things free from personal prejudices.
  - d. Religion.
5. The study of philosophy

- \*a. Increases the range of things one considers possible.
- b. Increases one's IQ.
- c. Increases one's credulity.
- d. Increases one's ability to win lawsuits.

- \*6. Russell claims that thinking about questions that do not admit of definitely correct answers is a way of
- a. Angering one's parents.
  - b. Becoming a fool.
  - c. Achieving world peace.
  - \*d. Breaking free of customary beliefs.

7. Russell claims that some questions
- a. Cannot be demonstrably answered.
  - b. Are valuable in themselves.
  - c. Help one break free from one's prejudices.
  - \*d. All of the above.

- \*8. Philosophy seeks
- a. Money.
  - b. Power.
  - \*c. Knowledge.
  - d. Persuasion.

9. The value of philosophy, according to Russell, lies in goods of the
- a. Body.
  - \*b. Mind.
  - c. Heart.
  - d. Heavens.

10. Russell contrasts philosophy with
- a. Theology.
  - \*b. Science.
  - c. Mathematics.
  - d. All of the above.

***Essay Questions for Student Resources***

1. What kinds of questions do the sciences consider? What is different about philosophical questions?
2. Do you think that philosophy is for everyone? If not, what sort of person is uniquely suited to study philosophy? Are you one of those people?
3. Is philosophy beneficial for the general public? Explain.

# Defence of Socrates

Plato

## *Essay Questions for Test Bank*

1. What is Socrates's method of defense? What method do most men employ? Do you think that Socrates has chosen the best way of defending himself? Explain.

A good essay will:

- Clearly describe Socrates's method of defense.
- Clearly describe the method of defense most men employ, as recorded by Plato.
- Contrast the two methods by stating, in your words, whether or not Socrates has chosen the better method of defending himself. Explain your answer by providing examples that support your conclusion.

2. Why does Socrates say that he is not afraid of death? Why is he hopeful that death is good? What do you think about what he says?

3. What does Socrates mean when he says that "an unexamined life is no life for a human being to live"? Do you agree? Explain.

## *Objective Questions*

True/False

- \*1. Socrates is formally accused of charging money for instruction. (F)
- 2. Socrates claims that if he is put to death, Athens will harm itself more than it harms him. (T)
- \*3. Socrates claims to be on a divine mission. (T)
- 4. Socrates fears death. (F)
- \*5. Socrates thinks that wealth is without value. (F)
- 6. Socrates argues that the values of Athenians are misplaced. (T)
- \*7. Socrates admits that he is wiser than most men. (T)
- 8. Socrates admits that he is not wise. (T)
- \*9. Socrates obeys the commands of a divine voice in his head. (T)
- 10. The jury is persuaded by Socrates' arguments. (F)

## *Multiple Choice*

- \*1. According to the formal charges brought against him, Socrates is guilty of
  - a. Corrupting the young.
  - b. Turning the weaker argument into the stronger.
  - c. Failing to acknowledge the gods of Athens.
  - \*d. Both a and c.
- 2. Socrates examines \_\_\_\_\_ during his defense.
  - \*a. Meletus.
  - b. Anytus.

- c. Chaerephon.
- d. Lycon.

\*3. According to Socrates, the Delphic oracle declared that

- a. Craftsmen are wiser than politicians.
- b. Athens will suffer if Socrates is found guilty.
- c. Socrates should defend himself against the charges.
- \*d. No one is wiser than Socrates.

\*4. Socrates claims that Athenians should be ashamed for valuing things like wealth, honor, and glory more highly than

- a. Truth and understanding.
- b. Goodness.
- c. The state of their souls.
- \*d. All of the above.

5. Socrates thinks that we should not fear death because

- a. That would make us worry too much.
- b. The gods don't want us to.
- c. We know death is good.
- \*d. We don't know whether death is good or bad.

\*6. Socrates suggests that he be sentenced to

- \*a. Free meals for life.
- b. Exile.
- c. Death.
- d. A new trial.

7. Socrates claims that for the jury to sentence him to death is to harm its members more than him because

- a. They will accidentally kill themselves instead.
- b. He is too strong.
- \*c. It is unjust.
- d. They will be invaded.

\*8. According to Socrates, the man of self-respect considers

- a. Death.
- \*b. Justice.
- c. Nothing.
- d. Both a and b.

9. Meletus's self-contradiction is that he claims that Socrates

- a. Is a man but not mortal.
- b. Is both guilty and not guilty.
- \*c. Acknowledges no gods and acknowledges gods other than the ones Athens acknowledges.

d. Wants to harm himself and does not want to harm himself.

\*10. Socrates hopes that death is a good thing because it is

a. An opportunity to examine many great people.

b. Like a deep sleep.

c. Intensely pleasurable.

\*d. Both a and b.

***Essay Questions for Student Resources***

1. What are the charges against Socrates? How does he claim to show that they are false?

2. Socrates compares himself with a “gadfly” and Athens with a lazy horse. He also claims that for the jury members to put him to death is to harm themselves more than him. What is he trying to say, and do you agree? Explain.

3. In what way does Socrates admit that he is wiser than others? How does this relate to what he says about the fear of death?

## Part 2: Reasoning

### The Elements of Argument

Steven M. Cahn, Patricia Kitcher, and George Sher

#### *Reading Summary*

An argument, in logic, is a collection of statements consisting of one or more premises that support the truth of a conclusion. The task of logic is to understand and clarify this inferential relationship between premises and conclusion. A deductively valid argument is such that *if* the premises are true, it is impossible for the conclusion to be false. There exist many nondeductive arguments that are still good, however, while not fitting the definition of validity. An inductive argument demonstrates an inference from observed evidence to a generalized belief, one that is stronger or weaker depending on the number of positive instances cited in the premises. Hypothesis testing in science is an example of inductive reasoning, as is inference to the best explanation. The task of argument analysis is to reconstruct the premises and conclusion of an argument from an example of prose, and then to evaluate the strength of the inference.

#### *Weblinks*

“Blogic: A Web Logic Textbook,” J. David Velleman

<http://www.nyu.edu/classes/velleman/blogic/Logic/>

“Inductive Logic,” James Hawthorne

<http://plato.stanford.edu/entries/logic-inductive/>

### Improving Your Thinking

Stephen F. Barker

#### *Reading Summary*

One way of improving one’s reasoning ability is by learning different ways in which arguments can be bad. Several fallacies—tempting logical mistakes in reasoning—have special names. For example, an argument is called a *petitio principii* (or begging the question) when it takes the conclusion for granted. This is mistaken reasoning because it is useless for the purposes of convincing someone that the conclusion is true. Another common fallacy is that of the *ad hominem* argument. Such an argument attacks the person providing an argument rather than the argument itself. This kind of reasoning is often a mistake because bad people can make good arguments. There are many other fallacies worth avoiding as well (e.g., appeal to unsuitable authority, black-and-white thinking). One’s reasoning will improve by avoiding such common logical mistakes. Another way to improve one’s reasoning ability is to avoid ambiguous words. An ambiguous word may mean more than one thing. One may prevent ambiguity by defining the words one uses. There are at least three useful types of definition. Analytical definitions describe the meaning a word already has in language, whereas stipulative

definitions declare how one intends to use a word. Finally, revelatory definitions propose new ways of using words that have established usages. It can sometimes be tricky to determine when one should define the words one is using. It would be absurd to always define the words one is about to use before using them. But it is wise to define those words that are likely ambiguous, vague, or otherwise unclear. Doing this will allow one to avoid merely verbal disputes, which arise when a single word is being used according to different meanings.

### ***Weblinks***

An Illustrated Book of Bad Arguments

<https://bookofbadarguments.com/>

## **Necessary and Sufficient Conditions**

Steven M. Cahn

### ***Reading Summary***

Condition A is necessary for B to happen if B cannot occur without A occurring. For example, being eighteen is a necessary condition for voting in the United States. Condition A is sufficient for B to happen if the occurrence of A ensures the occurrence of B. In an American presidential election, receiving 300 electoral votes is sufficient for being elected president. Misunderstandings about necessary and sufficient conditions are the source of many fallacies in arguments. It's important to note that a condition can be necessary but not sufficient: being eighteen is not *sufficient* for being able to vote, because one must also be a US citizen. A condition can also be sufficient but not necessary. Receiving 300 electoral votes will ensure that one is elected, but so would receiving 299 votes.

### ***Weblinks***

Video explanation by Kelley Schiffman, published July 22, 2013:

[http://youtu.be/5LqNm9d2\\_\\_I/](http://youtu.be/5LqNm9d2__I/)

For a LOT more detail:

<http://plato.stanford.edu/entries/necessary-sufficient/>

## **Scientific Inquiry**

Carl G. Hempel

### ***Reading Summary***

Ignaz Semmelweis's work discovering the cause of a difference in mortality rates resulting from childbed fever in two nineteenth-century Hungarian maternity wards of the same hospital nicely illustrates the method of scientific inquiry. Semmelweis considered and tested various hypotheses before settling on the explanation that the doctors and

medical students had been spreading infectious material to the women because they had not properly disinfected their hands before examinations. There are several methods for testing a proposed hypothesis. Direct observation of the proposed cause of the phenomenon that one is trying to explain is the simplest. If the proposed cause is removed and the phenomenon persists, then one can reject the hypothesis as false. But often one must indirectly observe the expected effects of the proposed cause, rather than the cause itself. This may involve experimentation. For example, Semmelweis tested the hypothesis that the increased mortality rate was a result of the position the mother was delivered in, which differed between wards. But when the mothers in one ward were put in the same position as those in the other, there was no change in mortality rate. So the hypothesis was rejected. We can call the expected effect of the proposed hypothesis its test implication. If the test implication is false, the hypothesis may be rejected. This is an example of a deductively valid pattern of reasoning—*modus tollens*. It is more difficult, however, to establish the truth of a hypothesis by experimentation. If the test implication is shown to be true, then one cannot validly infer that the hypothesis is correct. This would be to commit the fallacy of affirming the consequent. The fallacy occurs even if many test implications of the same hypothesis are shown to be true. But this does not mean that experimental inquiry leads to no gains when test implications are shown to be true. Favorable results support the hypothesis, confirming it until it is shown to be false.

### ***Weblinks***

“Carl Hempel,” James Fetzer

<http://plato.stanford.edu/entries/hempel/>

“Scientific Explanation,” James Woodward

<http://plato.stanford.edu/entries/scientific-explanation/>

“Antiscience Beliefs Jeopardize US Democracy,” Shawn Lawrence Otto

<http://www.scientificamerican.com/article/antiscience-beliefs-jeopardize-us-democracy/?page=1/>

## **Antiscientism**

Gillian Barker and Philip Kitcher

### ***Reading Summary***

In “Antiscentism,” Gillian Barker and Philip Kitcher discuss the nature and origins of the antiscience sentiments that they take to exist throughout the world today. Worries about the human implications of the scientific worldview date back to the seventeenth and eighteenth centuries when the Scientific Revolution began to “disenchant” the world by replacing the traditional, human-centered view of the cosmos with a vision of a vast, impersonal world devoid of meaning and purpose. Subsequent scientific advances—including the advent of evolutionary biology, neuroscience, quantum physics, and cognitive science—served to further this disenchantment. Defenders of science, however, celebrate the liberation of humanity from its prescientific illusions, touting the intellectual



freedom science offers as well as the beauty, order, and richness of the world it reveals. Nonetheless, many people continue to see modern science as a threat to central aspects of their way of life and seize upon its predictive failures to generate doubt about the authority of its claims. People are also apt to reinterpret the theoretical bases for science's practical successes to make them consistent with traditional, non-scientific beliefs (such as the existence of God). According to Barker and Kitcher, antiscience sentiment is facilitated by public debates in the media, which often present the views of non-specialists as credible alternatives to positions put forward by scientific experts.

***Weblinks***

“Truth and Science,” Philip Kitcher (video)

<https://www.youtube.com/watch?v=NGjrISYITek>

## Part 2 Questions: Reasoning

### The Elements of Argument

Steven M. Cahn, Patricia Kitcher, and George Sher

#### *Essay Questions for Test Bank*

1. What do the authors mean by saying that the direction of argumentation must always be from the more obvious to the less obvious? Explain.

A good essay will:

- Explain clearly what is meant by direction of argumentation.
- Which claims in the argument should be the more obvious and which less obvious, and why?
- Provide examples that illustrate your point.

2. How is it that nondeductive arguments can be considered good reasoning even though they do not pass the test of validity?

3. Why is Sherlock Holmes's use of "deduction" not the same as how logicians use the term, and how do the authors define this type of reasoning?

#### *Objective Questions*

*True/False*

- \*1. The task of logic is to establish rules of inference. (T)
- 2. Deductive arguments require valid premises. (F)
- \*3. A valid argument can only be a deductive argument. (T)
- 4. An argument with false premises can never be valid. (F)
- \*5. An invalid nondeductive argument can still be an example of good reasoning. (T)
- 6. Positive instances confirm an inductive generalization. (T)
- \*7. Hypothesis testing in science is an example of deductive reasoning. (F)
- 8. Inference to the best explanation is an example of inductive reasoning. (T)
- \*9. Argument analysis involves identifying premises and conclusion in ordinary language. (T)
- 10. Adding unstated assumptions to a reconstructed argument is not acceptable in argument analysis. (F)

#### *Multiple Choice*

- \*1. An argument in logic consists of
  - a. Obviously true statements.
  - b. Controversial statements.
  - \*c. A collection of statements including one or more premises and a conclusion.
  - d. True statements.
- 2. The central concept of deductive logic is

- a. Truth.
- \*b. Validity.
- c. Inference.
- d. Necessity.

\*3. A valid deductive argument must have

- a. True premises.
- b. A true conclusion.
- c. Both a and b.
- \*d. Neither a nor b.

4. A nondeductive argument is

- a. Always an example of bad reasoning.
- \*b. Not necessarily an example of bad reasoning.
- c. Valid.
- d. Always an example of good reasoning.

\*5. Inductive arguments rely on

- \*a. Observed cases to infer the recurrence of unobserved cases.
- b. Unobserved cases to infer the recurrence of observed cases.
- c. A valid inference from premises to conclusion.
- d. Lack of evidence.

6. Our strength of belief should

- a. Decrease with the number of positive instances of a claim.
- b. Decrease with the variety of positive instances of a claim.
- \*c. Increase with the number of positive instances of a claim.
- d. Depend on our inner certitude of a claim's truth.

\*7. The successful test of a hypothesis

- a. Counts against of the hypothesis.
- \*b. Counts in favor of the hypothesis.
- c. Does not affect the confirmation of the hypothesis.
- d. Means the hypothesis is true.

8. Inference to the best explanation requires that

- \*a. The truth of the conclusion gives us good reason to expect that the premises are true.
- b. The truth of the premises gives us good reason to expect that the conclusion is true.
- c. The conclusion follows from the premises deductively.
- d. The conclusion could never be false given the truth of the premises.

\*9. The initial step in argument analysis is to

- a. Add unstated assumptions.
- b. Evaluate the strength of the inference.
- \*c. Identify the premises and conclusion.
- d. Discard rhetorical fluff.

10. The most important step in argument analysis is to
- Add unstated assumptions.
  - \*b. Evaluate the strength of the inference.
  - c. Identify the premises and conclusion.
  - d. Discard rhetorical fluff.

### ***Essay Questions for Student Resources***

1. Explain the difference between a deductive argument and an inductive argument.
2. Define “validity” in your own words. Then give an example of a valid argument and explain why it is valid.
3. Give an example of an invalid argument with a missing premise. Then put the argument into standard form. Now provide a counterexample to the argument and explain why it shows that the argument is invalid.

## **Improving Your Thinking**

Stephen F. Barker

### ***Essay questions for Test Bank***

1. Give an example of an argument that begs the question. Explain why and exactly how the argument is fallacious.

A good essay will:

- State the premise(s) and conclusion of an argument that begs the question.
- Examine the role of the conclusion with regard to the premises.
- Explain the fallacious type of reasoning involved in this argument.

2. Provide an example of an ambiguous word and give its multiple meanings. Then provide an example of where this word gives rise to a verbal dispute. Explain how a definition might resolve the dispute.
3. What is an *ad hominem* argument? Can you think of any context in which such arguments are common? Explain whether you think they are a problem in this context and why.

### ***Objective Questions***

*True/False*

- \*1. It is always good to define one’s words before using them to persuade someone else about something. (F)
2. As logicians use the term, “fallacy” refers to a mistaken belief or false statement. (F)
- \*3. A metaphor can provide a revelatory definition. (T)
4. Circular reasoning is called *ad hominem*. (F)

- \*5. The fallacy of *petitio principii* involves circular reasoning. (T)
- 6. Fallacious reasoning is often very convincing. (F)
- \*7. Ambiguous words are at the heart of verbal disputes. (T)
- 8. It is always a fallacy to appeal to famous people in support of one's conclusion. (F)
- \*9. An analytical definition may be arbitrary. (F)
- 10. A fallacy is an invalid argument. (F)

### ***Multiple Choice***

- \*1. A fallacy is
  - \*a. A tempting logical mistake in reasoning.
  - b. The use of ambiguous terms.
  - c. An invalid argument.
  - d. A mistaken belief.
  
- 2. Any fallacy must include a
  - a. False premise
  - b. False conclusion.
  - c. Both a or b.
  - \*d. Neither a nor b.
  
- \*3. The fallacy of complex question
  - a. Is not a fallacy at all.
  - b. Is a particular version of the *ad hominem* fallacy.
  - \*c. Is a particular version of the fallacy of *petitio principii*.
  - d. Involves appeal to irrelevant authority.
  
- 4. An argument that fails to prove anything because it takes for granted what it is supposed to prove is
  - a. The fallacy of complex question.
  - \*b. A particular version of the fallacy of *petitio principii*.
  - c. The *ad hominem* fallacy.
  - d. The fallacy of black-and-white thinking.
  
- \*5. An appeal to unsuitable authority is
  - a. A fallacy of irrelevance.
  - b. A particular version of the fallacy of *petitio principii*.
  - c. Occurs when there is no good reason to think this authority is an expert on the issue.
  - \*d. Both a. and c.
  
- 6. An analytical definition should not be
  - a. Too broad.
  - b. Too narrow.
  - c. Circular.
  - \*d. All of the above.
  
- \*7. A stipulative definition should not

- a. Be too broad.
- \*b. Assign an arbitrary definition to a word with an established meaning.
- c. Be arbitrary.
- d. Be circular.

8. Revelatory definitions

- a. Characterize the meaning a word already has.
- b. Stipulate how a speaker intends to use a word.
- c. Increase the ambiguity of a word.
- \*d. Perfect the usage of a word growing out of previously established usages.

\*9. Defining all of one's terms at the beginning of a discussion is

- a. Necessary to avoid confusion.
- b. Possible to do but not necessary.
- \*c. Impossible because there will always be undefined terms no matter how far one proceeds.
- d. The only way to make sure the speakers are discussing the same thing.

10. A verbal dispute arises when

- \*a. A word is being used with different meanings.
- b. A word is clearly defined.
- c. Two people disagree on an issue.
- d. A fallacy of reasoning is used.

***Essay Questions for Student Resources***

1. Everyone is familiar with the scene in which a lawyer objects that the other side is "leading the witness" in a courtroom examination. What fallacy is being committed? Why is it pernicious in this context? Explain.
2. What is the fallacy of black-and-white thinking? Why is it a fallacy? Explain first by providing your own example of the phenomenon and second by explaining how things could go better if the fallacy were not committed.
3. Give your own example of a revelatory definition and explain why it is correct.

**Necessary and Sufficient Conditions**

Steven M. Cahn

***Essay Questions for Test Bank***

1. Explain why it is important not to confuse necessary and sufficient conditions. In your answer, provide an example of a condition that is necessary but not sufficient, an example of a condition that is sufficient but not necessary, and finally an example of a condition that is both necessary and sufficient for another condition.

A good essay will:

- Demonstrate the use of necessary and sufficient conditions correctly in the three examples;
- Explain why an understanding of these relationships is critical to logical reasoning.

2. Imagine that a dog trainer says, “My obedience course is sufficient to make any dog well-behaved.” A listener responds by saying, “My dog is already well-behaved, without taking your course, so that proves you are wrong.” Is the listener correct? Why or why not?

3. Imagine that a philosopher says, “Knowing how to read is a necessary condition for being a philosopher.” A listener responds by saying, “I’m a philosopher, but I don’t know how to read.” Has the listener proved that the philosopher’s statement is wrong? Why or why not?

### ***Objective Questions***

*True/False*

- \*1. Confusing necessary and sufficient conditions is a common mistake in reasoning. (T)
- 2. If A is necessary for B, then B is necessary for A. (F)
- \*3. If A is necessary for B, then B is sufficient for A. (T)
- \*4. For human beings, breathing is a sufficient condition for staying alive. (F)
- 5. It is a fallacy to reason that if A is sufficient for B, then A is necessary for B. (T)
- 6. If A is sufficient for B, then B is necessary for A. (T)
- \*7. Being at least eighteen is a necessary condition for voting in the United States. (T)
- 8. Being a rectangle with four equal sides is necessary and sufficient for being a square. (T)
- \*9. The presence of oxygen is a sufficient condition for a candle to be burning. (F)
- 10. A candle burning is a sufficient condition for the presence of oxygen. (T)

### ***Multiple Choice***

- 1. If one state affairs, A, is a necessary condition for another state of affairs, B, then
  - a. A cannot occur without B occurring.
  - \*b. B cannot occur without A occurring.
  - c. Both a and b.
  - d. Neither a nor b.
- \*2. If A is a sufficient condition for B, then B is
  - \*a. A necessary condition for A.
  - b. A sufficient condition for A.
  - c. Both necessary and sufficient for A.
  - d. Neither necessary nor sufficient for A.
- 3. For a human to live, being able to breathe is
  - \*a. A necessary condition.

- b. A sufficient condition.
- c. Both a necessary and a sufficient condition.
- d. Neither a necessary nor a sufficient condition.

\*4. For a rectangle to be considered a square, having four sides of equal length is

- a. A necessary condition.
- b. A sufficient condition.
- \*c. Both a necessary and a sufficient condition.
- d. Neither a necessary nor a sufficient condition.

5. To be a college student, owning a computer is

- a. A necessary condition.
- b. A sufficient condition.
- c. Both a necessary and a sufficient condition.
- \*d. Neither a necessary nor a sufficient condition.

6. For a shape to be a triangle, having three sides is

- a. A necessary condition.
- b. A sufficient condition.
- \*c. Both a necessary and a sufficient condition.
- d. Neither a necessary nor a sufficient condition.

7. For winning a race, crossing the finish line first is

- a. A necessary condition.
- b. A sufficient condition.
- \*c. Both a necessary and a sufficient condition.
- d. Neither a necessary nor a sufficient condition.

8. “You can’t be a good athlete without studying ballet.” Which of these would be the best way to prove that this statement is false?

- a. Show an example of a good athlete who has studied ballet.
- \*b. Show an example of a good athlete who has NOT studied ballet.
- c. Show an example of a ballet student who is a good athlete.
- d. Show an example of a ballet student who is NOT a good athlete.

\*9. Claim: “Caring about students is a necessary condition for being a good teacher.”

Objection: “Lots of people care about students and still aren’t good teachers.” Does this objection show that the claim is wrong?

- \*a. No, because the claim is only that caring is necessary, not sufficient.
- b. No, because caring can be necessary and still be sufficient.
- c. Yes, because caring about students is both necessary and sufficient.
- d. Yes, because it’s true that caring is not sufficient to make one a good teacher.

\*10. A certain college requires all students to have physical education credits to graduate. For this college, physical education is

- \*a. A necessary condition for graduating.



- b. A sufficient condition for graduating.
- c. Both necessary and sufficient for graduating.
- d. Neither necessary nor sufficient for graduating.

11. A college offers an elective course in the history of philosophy. Students may choose to take it to fill a humanities requirement or they may take a different course. For this college, the history of philosophy course is

- a. A necessary condition for graduating.
- b. A sufficient condition for graduating.
- c. Both necessary and sufficient for graduating.
- \*d. Neither necessary nor sufficient for graduating.

12. A philosopher says, "Studying philosophy is sufficient to teach critical thinking." Which would be the best response if you wanted to argue that this statement was false?

- a. "Other disciplines, like literature or science, are just as good at teaching critical thinking."
- b. "Other disciplines, like literature or science, also teach very important skills."
- \*c. "Other disciplines, like literature or science, are also necessary for teaching critical thinking."
- d. "Other disciplines, like literature or science, could also be sufficient for teaching critical thinking."

13. "Practicing is necessary if you want to play guitar well." Which of these would be the best response if you wanted to prove that this statement is false? (Pretend for a minute that it's false.)

- a. Talent is also necessary if you want to play well.
- \* b. Some people play well even though they have never practiced.
- c. Some people learn to play faster than others.
- d. Some people never learn to play well even though they practice.

\*14. A job ad says, "Qualified candidates for this job must speak fluent Latin." This means that

- a. Speaking Latin is sufficient for getting the job.
- \*b. Speaking Latin is necessary for getting the job.
- c. Speaking Latin is necessary and sufficient for getting the job.
- d. Speaking Latin is neither necessary nor sufficient for getting the job.

15. If a college degree is a necessary condition to be hired for a certain job, then

- a. The degree cannot, logically, be a sufficient condition for being hired.
- b. The degree must, logically, be a sufficient condition for being hired.
- c. If you have the degree, you will definitely get the job.
- \*d. If you don't have the degree, you definitely won't get the job.

### ***Essay Questions for Student Resources***

1. How would you explain the difference between necessary and sufficient conditions to someone who was confusing them?

2. Imagine that your professor says, “Attendance every day is necessary to get an A.” You attend the class every day, but you don’t get an A. Has your professor been dishonest? Why or why not?

3. Imagine that your professor says, “A perfect score on every assignment is sufficient to get an A in this class.” A student objects, “It’s not fair to grade so harshly. You shouldn’t demand perfection just to get an A.” Do you think the professor’s statement is fair? Why or why not?

## Scientific Inquiry

Carl G. Hempel

### *Essay Questions for Test Bank*

1. Explain Semmelweis’s reasoning for the conclusion that the increased mortality rates in the First Division were the result of blood poisoning. Be sure to discuss some of his rejected hypotheses.

A good essay will:

- Distinguish between the evidence Semmelweis relied on and each of the hypotheses he tested;
- Explain why he abandoned each of his earlier hypotheses;
- Evaluate the overall strength of his conclusion about blood poisoning.

2. Why is it easier to establish that a hypothesis is false by the experimental method than that it is true?

3. Explain the difference between direct observation of a cause and indirect observation of its expected effects using examples from the reading.

### *Objective Questions*

*True/False*

- \*1. *Modus tollens* and affirming the consequent are two forms of deductively valid argument. (F)
- 2. The scientific method uses logical reasoning to establish empirical propositions. (T)
- \*3. Test implications cannot be conclusively shown to be true. (F)
- 4. Affirming the consequent is a valid argument form. (F)
- \*5. If the test implications of a hypothesis are shown to be true, then the hypothesis is conclusively confirmed. (F)
- 6. It is easier to establish the falsity of a hypothesis than its truth by scientific inquiry. (T)
- \*7. Experiments require laboratory settings. (F)
- 8. Hypotheses are self-evidently true. (F)
- \*9. A test implication is an expected effect of a hypothesis. (T)
- 10. Hypotheses are most usually tested directly, by checking to see if they conflict with readily observable facts. (F)

**Multiple Choice**

- \*1. Semmelweis was concerned that more instances of childbed fever occurred in the
- Vienna General Hospital than in other hospitals.
  - Vienna General Hospital than in home deliveries.
  - \*c. First Maternity Division than in the Second.
  - Second Maternity Division than in the First.
- \*2. Semmelweis considered and rejected explanations including
- "Atmospheric-cosmic-telluric" influences
  - Overcrowding
  - Rough examination by medical students
  - \*d. All of the above.
3. The first clue as to the cause of childbed fever came when
- A priest bearing the last sacrament came to a woman's deathbed.
  - Women were delivered lying on their backs.
  - \*c. A colleague received a puncture wound during an autopsy.
  - The medical washed their hands in a solution of chlorinated lime.
- \*4. The hypothesis of infected cadaveric material explained
- The lower mortality among street births.
  - Why the women attended by midwives did not get childbed fever.
  - \*c. Both a. and b.
  - Why the medical students refused to wash their hands in a solution of chlorinated lime.
5. Semmelweis's story illustrates
- \*a. The scientific method.
  - Affirming the consequent.
  - Good medical care.
  - Formal logic.
- \*6. A *modus tollens* argument
- Is a deductively valid argument form.
  - Is one way of establishing a true hypothesis.
  - Is one way of reasoning to a false hypothesis.
  - \*d. Both a and c.
7. To confirm a hypothesis is
- To show that it is conclusively true.
  - \*b. To show that it is supported by the best available evidence.
  - To show that it is false.
  - To show that it is supported by the laws of logic.
- \*8. A test implication
- Is an expected effect of a given hypothesis.

- b. May be true or false.
- c. May be tested for by experiment.
- \*d. All of the above.

9. The mode of reasoning known as “affirming the consequent”

- a. Is deductively valid.
- b. Is a way of disconfirming a hypothesis.
- \*c. May involve a true test implication.
- d. Is the same as *modus tollens*.

\*10. When a test has a favorable outcome that means that

- a. The proposed hypothesis is true.
- b. The proposed hypothesis has been proven.
- \*c. There is support for the hypothesis.
- d. Both a and b.

### ***Essay Questions for Student Resources***

1. Make up a hypothetical problem and construct a possible experiment to determine its cause. Explain exactly what your experiment establishes.
2. What is the fallacy of affirming the consequent? Give an example and explain what is wrong with it.
3. Provide an example of a *modus tollens* argument that is not in the reading. Explain why it is a good argument (e.g., persuasive).

## **Antiscientism**

Gillian Barker and Philip Kitcher

### ***Essay Questions for Test Bank***

1. How do Barker and Kitcher explain the origin of antiscience attitudes? Is this explanation fully convincing in your view? Why or why not?

A good essay will:

- Provide a thesis at the outset that clearly states whether Barker and Kitcher’s explanation is fully convincing.
- Provide a thorough and detailed exposition of Barker and Kitcher’s explanation, focusing on how modern science gave rise to a disenchanted view of the world.
- Provide a careful critical evaluation of Barker and Kitcher’s explanation that explains either (a) where and why it goes wrong OR (b) why it is convincing (this can include defending it from possible objections).

2. According to Barker and Kitcher, many people see modern science as a threat to central aspects of their way of life. Do you see science as threat in this way? Why or why not?

3. How do defenders of science respond to antiscience attitudes according to Barker and Kitcher? Is this response persuasive in your view? Why or why not?

### ***Objective Questions***

#### ***True/False***

- \*1. According to Barker and Kitcher, antiscience attitudes began with emergence of evolutionary theory and quantum physics. (F)
- 2. Prior to the Scientific Revolution, Europeans understood the world as filled with meaning and purpose. (T)
- \*3. Defenders of science argue that the Scientific Revolution helped to undermine oppressive social orders. (T)
- 4. Barker and Kitcher claim that the media has played a role in the growth of antiscience. (T)
- \*5. According to Barker and Kitcher, modern science poses no threat to people's religious convictions. (F)

### ***Multiple Choice***

- 1. According to Barker and Kitcher, antiscience sentiments began
  - a. With the advent of quantum physics.
  - \*b. In the seventeenth and eighteenth centuries.
  - c. With Darwin's theory of evolution.
  - d. In the philosophy of Descartes.
- \*2. According to Barker and Kitcher, hostility toward science effects
  - \*a. Public decision making about scientific policy.
  - b. The number of people interested in pursuing careers in science.
  - c. Both a and b.
  - d. Neither a nor b.
- 3. Before the Scientific Revolution, Europeans understood the world as
  - a. Centered around human beings.
  - b. Only a few hundred human generations old.
  - c. Filled with meaning and purpose.
  - \*d. All of the above.
- \*4. According to Barker and Kitcher, the new sciences of the seventeenth and eighteenth centuries revealed a world that was
  - a. Beyond human comprehension.
  - b. The center of the universe.
  - \*c. Vast and impersonal.
  - d. All of the above.

5. In the writings of scientists and philosophers, the world as understood by modern science is often described specifically as
- a. An *empty* world.
  - \*b. A *disenchanted* world.
  - c. A *lost* world.
  - d. An *impersonal* world.
- \*6. According to Barker and Kitcher, \_\_\_\_\_ has brought the full force of the scientific worldview to bear on our understanding of ourselves.
- a. Quantum physics.
  - \*b. Evolutionary biology and neuroscience.
  - c. Cartesian philosophy.
  - d. Both a and b.
7. According to Barker and Kitcher, defenders of science respond to antiscience attitudes by pointing to the way modern science offers
- a. Intellectual freedom.
  - b. A deep appreciation for the beauty, order, and richness of the world.
  - c. Liberation from social orders marked by oppression and religious dogmatism.
  - \*d. All of the above.
- \*8. According to Barker and Kitcher, many people seek to retain their traditional beliefs in the face of scientific progress by
- \*a. Reinterpreting the theoretical bases of science's practical successes.
  - b. Ignoring science practical successes.
  - c. Personally attacking scientists.
  - d. All of the above.
9. According to Barker and Kitcher, central aspects of people's way of life including \_\_\_\_\_ are threatened by modern science.
- a. Their religious beliefs.
  - b. Their commonsense beliefs about the world.
  - \*c. Both a and b.
  - d. Neither a nor b.
- \*10. According to Barker and Kitcher, the growth of antiscience is facilitated when
- a. Debates in the media make scientific issues seem more controversial than they are.
  - b. Scientific predictions and interventions are less successful.
  - \*c. Both a and b.
  - d. Neither a nor b.

### ***Essay Questions for Student Resources***

1. Explain the image of the "disenchanted" world. What has led many scientists and philosophers to describe the world this way?
2. How prevalent do you think antiscientism is in the world today? Do you think it is

becoming more prevalent or less? Explain your answer.

3. Why do Barker and Kitcher think that discussions about science in the media contribute to the growth of antiscience attitudes?