



Notes on the Practice Exam

This practice exam has three major sections to it: test, answer key with hints, and scoring guide. You'll get the most out of this practice if you make the experience as authentic as possible so carefully follow the directions below. Good luck.

Directions

Find a quiet place to spend the next hour or two. Clear away all distractions and set a timer for 35 minutes. Once you start the timer resist the urge to pause for any reason or to peek ahead at the answers and hints. Once the timer goes off stop all work on test. Use the answer key to correct your test and the scoring guide to estimate your score on this practice exam. Lastly, go back through the exam using the hints to brush up on the ones you missed.

Passage 1

PROSE FICTION: This passage is adapted from the short story “When Did You Write Your Mother Last?” by Addison Lewis (b. 1889).

Collins was a bum. He roamed about the country summer and winter, a restless spirit whose sole desire was to get food enough to keep him alive and beer as often as possible. He never

5 stayed in one place long enough for people to inquire why he hadn't a regular job—because engraven on his soul was a solemn pledge: “Never Work.” If he had ever condescended to do a little manual labour, he would have elevated

10 himself to the status of a tramp. A tramp will work, if there is no other way out. But a bum—never.

The most good-for-nothing among us, say the psychologists, have some capability to do a certain thing better than the average of our

15 fellows. Collins was known as the best yarn spinner among his disorganized cohorts. He could take them with him over the broad, cracked face of the earth. In another stratum Collins might have been a successful writer of “red-blooded” fiction or

20 thrilling scenarios for the movies. But most every man has known some unheralded genius like Collins, blissfully ignorant of his own possibilities and therefore three times blessed.

One raw night toward the end of November,

25 Collins and a pal were hugging a radiator in the lobby of the Salvation Army hotel in Minneapolis. Why they happened to be there I don't know. Where they had come from, I don't know. But they were there. And it was good to feel the hot pipes

30 pressed against their shivering bodies. They were cold and hungry and miserable; the joy of life had fled from their souls. Under their breath they cursed each other, God and the weather.

“Hell!” muttered Collins.

35 His pal did not answer. A single tear was trickling down his unshaven cheek. He was a young man almost half Collins's age. His gaze was fixed on the opposite wall, and Collins, following its direction, encountered a placard in large letters: “When did You Write Your Mother

40 Last?”

Collins hugged the radiator several minutes longer. Then he turned up his coat collar and left the room. He had decided to make another try at

45 pan-handling the price of a drink. When he came back his pal was hunched over the table with a pencil and a scrawled sheet of paper. Collins sat down opposite. “Obeyin' orders?” he asked jovially, raising an eyebrow toward the placard.

50 The kid ignored him. He was writing feverishly.

Collins sat still, regarding the placard with half-shut, musing eyes. His lips twisted in a bitter smile. “‘When Did You Write Your Mother Last?’”

55 he murmured. He put his arms on the table and pillowed his head on them. Five minutes passed. Collins felt a heavy hand on his shoulder. “You can't sleep here,” said the room clerk.

“Eh?” said Collins, “I wasn't asleep.”

The clerk started back to his desk. Collins got

60 to his feet and followed him. “How much for paper and an envelope?”

“Two cents.”

Collins produced the coins. He went back to the table and sat down. After an infinite search he

65 brought forth a stump of a pencil from somewhere in the depths of his being. He began to write. Slowly, haltingly with a prodigious effort the words came. His copious speaking vocabulary, adapted to the demands of a hundred varying tales of his

70 roving life, suddenly seemed to have vanished

before the task of composing a simple letter. It was years since he had written anything but his name. After a time, Collins, glancing up, found the kid's eyes on him.

- 75 Deliberately the kid leaned over and read "Dearest Mother—" Collins jerked the letter away. The kid was shaking with silent laughter. "Writin' to your maw! Forget it! You never had no maw. Tole me yerself you was brung up in an orphan pen."
- 80 Collins failed to answer. It was true, Collins had never known a mother. But that fact did not bother now. For his fervid imagination was aglow visualizing a perfect mother—his mother, to whom
- 85 he was pouring out his heart in a badly scrawled letter—abasing himself before her love, which he was sure had followed him over his long, starved years of wandering; castigating himself in the light of her certain forgiveness. He blessed her in
- 90 words, wrung from the depths of his soul, begged her still to cherish her faith, that he knew had many times been sorely tried, for soon he was coming home—to her. The kid had long ago gone to his bunk, when Collins wrote:
- 95 "Affectshuntily, your son" and tucked the letter away in his coat.

- The point of view from which the passage is told can best be described as that of:
 - A first-person narrative of a self-labeled "bum" looking back on a shameful episode from his life.
 - A mostly omniscient storyteller recounting a personal tale from the life of Collins the "bum."
 - A vagrant alcoholic sharing his story through a second-person letter to his long lost mother.
 - An old pal of Collins' wistfully recalling a low point in their time together.
- It can reasonably be inferred from lines 8-11 that the narrator's tone is:
 - Haughtily condescending toward bums for being less diligent than tramps.
 - Soberly condemning of Collins' stubborn idleness.
 - Reservedly mournful about the depraved condition of humanity.
 - Ironically lofty in reflecting Collins' classification of bums and tramps.
- As it is used in line 16, the term "disorganized cohorts" refers to:
 - Collins' old school buddies
 - Collins' potential acquaintances
 - Collins' fellow rovers
 - Other undiscovered geniuses like Collins
- It may reasonably be inferred from lines 20-23 that the narrator believes:
 - The world is cruel for failing to recognize the brilliant gifts of people like Collins.
 - It is easier for people to be unaware than aware of their own potential.
 - There is nothing rare or special about Collins' talent.
 - Being a natural-born genius is a blessing that must not be squandered.
- The second paragraph (lines 12-23) establishes all of the following EXCEPT:
 - Collins is considered a good-for-nothing by psychologists who have worked with him.
 - Collins' ability to make something of his gift has been greatly limited by his social position.
 - Collins has the power to transport people with his riveting tales.
 - There are likely many people in the world much like Collins.
- Which of the following statements about Collins' character is supported by the passage?
 - He used to work in the film business.
 - He never works because of a disability.
 - He has limited intellectual capabilities.
 - He is not a highly educated man.
- Which of the following statements best describes the way the eleventh paragraph (lines 63-74) functions in the passage as a whole?
 - It contrasts Collins' usual storytelling confidence with his tentative literacy skills.
 - It provides a further example of Collins' tendency to exaggerate the truth about himself.
 - It illustrates an example of Collins' resolve to uphold his oath, "Never Work."
 - It foreshadows Collins' internal conflict over whether or not to send the letter.
- Which of the following would NOT be an acceptable synonym for the word "castigating" in line 88?
 - upbraiding
 - admonishing

- H. extolling
 - J. chiding
9. Without the last paragraph (lines 81-96), the passage would contain no specific example of Collins':
- A. innermost feelings
 - B. overactive imagination
 - C. relationship with his mother
 - D. inventive vocabulary
10. According to the passage, the relationship between Collins and the kid can be best described by which of the following statements?
- F. In spite of their teasing, they share a love for roving that goes back a long time.
 - G. It is suggested that the kid is likely Collins' own son.
 - H. The kid makes fun of Collins because he is actually jealous of him.
 - J. They have been brought together by hard circumstances and shared burdens.

Passage 2

SOCIAL SCIENCE: This passage is adapted from a section called “Economic Reasoning and Models” in a book titled *Introduction to Economic Analysis* by R. Preston McAfee (© 2006 by R. Preston McAfee). The author has made an online version of this book available under a Creative Commons Noncommercial Sharealike (BY-NC-SA) license, accessible at Lulu.com.

Economic reasoning allows one to speculate the likely effects of a policy change on people and their ability to purchase the goods and services they desire. As an absurd and tortured example, government production of helium for military purposes reduces the cost of children’s birthday balloons, causing a decrease in sales of party hats and hired clowns. The reduction in demand for clowns reduces clowns’ wages and thus lowers the costs of running a circus. This cost reduction in turn increases the number of circuses, thereby forcing zoos to lower admission fees in order to compete with circuses. Thus, were the government to stop subsidizing the manufacture of helium, the admission fee of zoos would likely rise, even though zoos use no helium.

There is a common assumption that the people used in economic analysis models seem exceedingly selfish compared to most people we know. We tend to assume that they always make the choice that is best for them. Such people are known occasionally as *homo economicus*. Real people are undoubtedly more altruistic than *homo economicus*, since they couldn’t be less. That doesn’t necessarily invalidate the conclusions drawn from such models, however, for at least two reasons. Firstly, people often make decisions as families or households rather than individuals, and it may be sensible to consider the household as the “consumer.” Secondly, economics is pretty much silent on *why* consumers want things. You may want to make a lot of money so that you can build a hospital or endow a library, which would be altruistic things to do.

So while there are limits to the applicability of the theory of self-interested behavior, it is a logical methodology for attempting a science of human behavior. Self-interested behavior will often be described as “maximizing behavior,” where consumers maximize the value they get from their purchases, or where firms maximize their profits. One objection to the economic methodology is that people rarely carry out the calculations necessary to literally maximize anything. However, people don’t carry out the physics

calculations to throw a baseball or thread a needle, either, and yet they are able to do these tasks. Economists often consider that people act “as if” they maximize an objective, even though no exact calculations are carried out. Some corporations in fact use elaborate computer programs to minimize costs or maximize their profits, and the entire field of operations research is used to create and implement such maximization programs.

A frequently-referenced example of economic reasoning is the *sunk cost fallacy*. Once one has made a significant investment that can’t be recovered, there is a psychological tendency to invest more, even when the earnings on the added investment isn’t worthwhile. France and Britain continued to invest in the Concorde (a supersonic aircraft no longer in production) long after it became clear that the project would generate little profit. If you watch a movie to the end, long after you have become convinced that it stinks, you have exhibited the sunk cost fallacy. The sunk cost fallacy is the result of an attempt to make an investment that has gone bad turn out to be good, even when it probably won’t.

This fallacy is also often thought to be the root cause of casinos’ success. People who lose a bit of money gambling hope to recover their losses by gambling more, with the sunk “investment” prompting an attempt to make that investment pay off. The nature of most casino gambling is that the casino wins on average, which means the average gambler loses on average. Thus, in most cases, trying to win back losses is to lose more.

The way economics is performed is by a proliferation of mathematical models. Models help economists by removing extra details from a problem or issue, letting us more readily analyze what remains. The purpose of the model is to illuminate connections between ideas. A typical result of a model is “when *A* increases, *B* falls.” This *comparative static* prediction lets us see how *A* affects *B*, and why, at least in the context of the model. The real world is always much more complex than the models we use to understand the world. Yet by stripping out extraneous detail, the model acts as a lens to isolate and understand aspects of the real world.

11. The main purpose of this passage can be best described as:
- A. To propose a new set of theories about economic behavior to a highly specialized, academic readership.
 - B. To firmly but casually establish and support the need for solutions to the various fallacies of economic study.
 - C. To present both the usefulness and limitations of a few of the basic concepts of economic methodology in a relatable manner.
 - D. To point out with some lightheartedness the obvious incongruities in the field of economic analysis and to present possible alternatives.
12. Use of the phrase absurd and tortured (line 4) indicates the author's:
- F. Frustration with the irrelevancy of certain formulaic theoretical models.
 - G. Distrust in the ethics behind government economic policies.
 - H. Attempt to highlight the harmful effects of government subsidies on unrelated markets.
 - J. Recognition that illustrations of economic principles are often excessively contrived.
13. As it is used in line 34, the term altruistic refers to:
- A. The selfless motivations of some consumers.
 - B. The choices made by households or families.
 - C. The underlying incentives of homo economicus.
 - D. The decision of some consumers to remain silent.
14. It can reasonably be inferred that one of the functions of the first paragraph is to:
- F. Provide evidence that the "trickle down" theory of economics is unreliable.
 - G. Demonstrate the absurdity of chain reactions created by small shifts in economic policy.
 - H. Illustrate the intricacies of the familiar law of supply and demand.
 - J. Support a policy of government subsidization of certain military resources.
15. The second paragraph (lines 17-34) suggests that one of the reasons the self-interested model of homo economicus is valid is that:
- A. Families may have charitable goals in mind when they want to make money.
 - B. It is plausible that households will act selfishly, even when the average individual won't.
 - C. Real people are so much less selfish than homo-economicus.
 - D. Self-interested behavior can be seen to exclude altruistic behavior.
16. When he compares economic maximizing to throwing a baseball (line 46), the author is most nearly illustrating his point that:
- F. While individuals rarely use specific calculations to maximize profits, companies often do so through operations research.
 - G. Maximizing methodology should not be refuted based on the argument that people don't literally carry out calculations.
 - H. Carrying out complex tasks requires sophisticated calculations, even if they are invisible.
 - J. The power of self-interested maximizing behavior to increase the value of consumer purchases should not be underestimated.
17. It may reasonably be inferred that which of the following idiomatic phrases would best reflect the sunk cost fallacy:
- A. Don't throw the baby out with the bathwater.
 - B. A fool and his money are soon parted.
 - C. Money makes money.
 - D. Don't throw good money after bad.
18. Without the fifth paragraph (lines 70-78), the passage would contain no specific example of:
- F. A major industry that makes use of the sunk cost fallacy.
 - G. A real-life application of the sunk cost fallacy.
 - H. The average losses resulting from committing the sunk cost fallacy.
 - J. A notable exception to the logic of the sunk cost fallacy.
19. Which of the following best states the author's view of predictions derived through the use of comparative static model (line 86)?
- A. They tend to be predictable but are reliable.
 - B. They can be overly simplistic but are useful.
 - C. They are unpredictable but fascinating.
 - D. They show results but not reasons.

20.

Which of the following statements about economic models is supported by the passage?

- F. The proliferation of such models has allowed economic theorists to speculate further into the future.
- G. The complexity of models often surpasses that of the real-life scenarios they are meant to reflect.
- H. Models are the simplest way to isolate and understand the economic phenomenon at hand.
- J. Models have resulted from the success of corporations in minimizing costs and maximizing profits.

Passage 3

HUMANITIES: This passage is adapted from the first chapter, "Tools of Understanding," of J. M. Balkin's book titled *Cultural Software: A Theory of Ideology* (©1998 by Yale University Press). With the permission of Yale University Press, the author has made an online version of this book available under a Creative Commons Noncommercial Sharealike (BY-NC-SA) license, accessible at the author's website at <http://www.balkin.com>

Some of the questions the philosophy of culture asks are these: What is the relationship of culture to human existence and human history? What role does culture play in producing the faculty of human reason? What power do culture and cultural forms have over individuals?

Although people use the term ideology in many different ways, they are usually invoking one of two basic conceptions. The first sees ideology as a worldview, an intellectual framework, a way of talking, or a set of beliefs that helps constitute the way people experience the world. In this conception, ideology is a relatively neutral term. The second conception of ideology is distinctly pejorative. Ideology is a kind of mystification that serves class interests, promotes a false view of social relations, or produces injustice.

But I would like to offer a third position. Oppressive discourses, worldviews, belief structures, and mystifications all arise from the diverse tools of human understanding. The components of cultural understanding include beliefs and judgments. But they also include cognitive mechanisms that help produce and fashion beliefs and judgments. These cognitive mechanisms include, among other things, heuristics for decision-making, narrative structures and social scripts, conceptual homologies (A is to B as C is to D), metaphor and metonymy, and methods of ego defense. Each of these cognitive mechanisms can be beneficial and useful in certain contexts, but in others each can mislead and help produce or sustain unjust conditions. Recognition of the simultaneous advantages and disadvantages of our tools of understanding is central to my argument. I call this the ambivalent conception of ideology.

The metaphor of "cultural software" proposes that we can compare certain features of culture to the software that is installed on a computer and that allows a computer to process information. However, although this can be a helpful

metaphor, it can also be misunderstood. With this in mind, I want to discourage two likely misinterpretations. First, I do not believe that the human mind works like any existing computer. On the contrary, human thinking is distinguished by its symbolic and metaphoric character and by its fundamental motivation in human values. Second, the idea of cultural software suggests an opposition to "biological hardware." But we cannot distinguish between "hardware" and "software" in humans in the way we can for computers. Each individual has a unique brain structure that is not merely the product of genetic inheritance but is shaped and organized in part by her experiences and activities, especially those in early childhood. As we are programmed through social learning, our physical brain structure is also changing.

The idea of cultural software is not designed to suggest or defend a neat division between the cultural and the natural. Rather, it directs our attention to the know-how that is part of every human being and that is shared by and transmitted between human beings through communication and social learning. The instincts and motivations that we have inherited from our genes are refined and articulated, distorted and exaggerated, extended and supplemented by experience and social learning. What is made is always made from materials already given, and its character and its limitations are shaped by those materials. We can fashion a purse from a sow's ear, but it will be the kind of purse that can be so fashioned.

Yet at the same time, culture has a cumulative power. And so as culture is transmitted and transformed, it opens up ever new horizons of human possibility. We can, and indeed we must, stand in complicated lines of inheritance and innovation. To be the bearer of a particular kind of cultural software, a configuration existing at this time and at no other, is what it means to be a historical being, to exist historically. History in this sense is a peculiarly human phenomenon; the Grand Canyon changes over time, but only human beings have history, beginning only at the moment when they begin to create collectively shared and created tools for understanding the world and articulating their values.

Culture and cultural software are just such tools. They are tools used to make other tools. For simplicity's sake, we might distinguish three kinds of cultural tools that human beings use. The

- 100 first is technology, the second is institutions, and the third is cultural know-how, or what I call cultural software. Technology makes tools from materials, institutions make tools from human sociability, and cultural software makes tools from human understanding.
21. According to the passage, the main basis for comparison between computer software and human culture is the idea that:
- Both are tools for building human know-how.
 - Computer software enables and limits a computer as cultural software enables and limits human understanding.
 - Human culture runs on a platform of biological hardware in the same way that computer software runs through electronic hardware.
 - Both function in a fundamentally metaphoric and symbolic fashion.
22. As it is used in lines 70-71, the statement "What is made is always made from materials already given" implies which of the following?
- Any product is limited by its component parts.
 - Nothing new or unpredictable can result from social learning.
 - Elements of human culture are by necessity given and shared freely.
 - Given the proper tools, the same parts will always be transformed into the same result.
23. According to information given in the passage, the author's *third position* on ideology:
- Is more closely related to the pejorative view of human judgment.
 - Provides a neutral way of understanding ideology as a way of seeing the world.
 - Is distinct because it acknowledges that tools of understanding can be either helpful or limiting.
 - Recognizes the inherently mystifying and transformative forces of human understanding.
24. Which of the following statements about cognitive mechanisms is supported by the passage?
- Examples include symbolic thinking, defensive behavior, and cultural transmission.
 - These mental processes can lead, in some cases, to problematic behavior.
 - Judgmental people must have stronger cognitive mechanisms.
 - They include pre-existing components of cultural understanding.
25. In lines 73-74, the *purse from a sow's ear* is intended as:
- A metaphor for the way cultural software is shared and transmitted through ideology.
 - A real-life example of cultural know-how and the importance of sophisticated tools.
 - A parable that demonstrates how human character can triumph over poor genes.
 - An illustrative allegory for the interaction between genetic inheritance and social learning.
26. As it is used in line 82, the term *configuration* refers to:
- A singular moment in the progression of human culture.
 - A particular method of organizing of genetic inheritance.
 - The cultural software installation process.
 - A legacy of historically unique innovations.
27. Which of the following is NOT a function of the fourth paragraph (lines 38-59)?
- To emphasize the ways in which the human brain and a computer function differently.
 - To suggest the parallels between the function of computer software and human culture.
 - To argue that nature is more important than nurture in determining human development.
 - To anticipate and counter misconceptions about the author's central theory.
28. It can reasonably be inferred from the sixth paragraph (lines 76-90) that the author would agree with which of the following statements?
- Culture progresses individual by individual.
 - The power of culture increases with the size of the human gene pool.
 - Universal culture is the only true culture.
 - Natural or geological history is not really history.

- 29.** As described in the passage, the relationship between brain structure and social learning can best be summarized by which of the following statements?
- A.** They are analogous to hardware and software, respectively.
 - B.** Social learning leads to changes in brain structure.
 - C.** Brain structure shapes social learning.
 - D.** Both are products of genetic inheritance.
- 30.** The central idea of the hypothesis proposed in the passage is that:
- F.** Computer software provides a useful model for considering the ways ideology shapes human understanding.
 - G.** Cultural software is a tool used to create additional human tools, including technology and institutions.
 - H.** Cultural know-how is passed down through social learning and genetic inheritance.
 - J.** Ideology can either aid or harm human belief structures, depending on your philosophical worldview.

Passage 4

NATURAL SCIENCES: This passage is adapted from an introductory college physics textbook, from the chapter “Complexity and Chaos” (©2012 by OpenStax College <<http://cnx.org/content/m42694/1.2/>>).

Our most spectacular successes in the field of physics, such as the prediction of previously unobserved particles, come from simple underlying patterns that we have been able to recognize through controlled experiments and unambiguous relationships. But there are systems of interest to physicists that are inherently complex. The simple laws of physics still apply, of course, but complex systems reveal patterns that simple systems do not, particularly the ability to adapt and evolve.

The primordial ocean is a striking example. When the oceans first formed, they were a random mix of elements and compounds that obeyed the laws of physics and chemistry. Yet laboratory simulations indicate that the emergence of life in about 500 million years was far too fast to have come from random combinations of compounds, even if driven by lightning and heat. There must be an underlying ability of the system to organize itself, resulting in the self-replication we recognize as life. Over time, this system evolved into the biological system we have today, leaving traces in the geological record of steps taken along the way.

Complexity as a discipline examines how complex systems adapt and evolve, looking for similarities with other complex adaptive systems. Can, for example, parallels be drawn between biological and economic evolution? Economic systems do emerge quickly, indicate self-organization, are complex (in the number and types of transactions), and adapt and evolve over time. There are other examples of complex systems being studied for fundamental similarities. Cultures show signs of adaptation and evolution, and the comparison of different cultural evolutions may shed light on biological evolution. Science itself is also a complex system of human interactions that adapts to new information, such as political pressures, and evolves, usually becoming more organized rather than less. Those who study creative thinking also see parallels with complex systems. Humans sometimes organize almost random pieces of information, often subconsciously while doing other things, and come up with brilliant insights. The development of language is another complex adaptive system that

shows similar tendencies. Artificial intelligence is an overt attempt to devise an adaptive system that will self-organize and learn in the same manner as intelligent living beings.

In traditional physics, the discipline of complexity may yield insights in certain areas.

Thermo-dynamics treats systems on the average, while statistical mechanics deals in some detail with complex systems of atoms and molecules in random thermal motion. Yet there is organization, adaptation, and evolution in those complex systems. Certain phenomena, such as heat transfer and phase changes, are characteristically complex in detail, and new approaches to them may evolve from complexity as a discipline.

Chaos, a predecessor to complexity that has been widely publicized and become a discipline of its own, is also based in physics and treats broad classes of phenomena from many disciplines. Chaos is a word used to describe systems whose outcomes are extremely sensitive to initial conditions. The orbit of the planet Pluto, for example, may be chaotic in that it can change tremendously due to small interactions with other planets. This makes its long-term behavior impossible to predict with precision, just as we cannot tell precisely where a decaying Earth satellite will land or how many pieces it will break into.

Some chaotic systems are also inherently complex; for example, vortices in a fluid as opposed to a double pendulum. Both are chaotic and not predictable in the same sense as other systems. Fractal patterns such as a Mandelbrot set indicate quantifiable order in the presence of chaos. Large-scale vortices in Jupiter’s atmosphere behave chaotically, but the triple-Earth-sized Great Red Spot has its own rotational energy and has remained stable for at least 400 years since it came into existence.

The disciplines of chaos and complexity have found ways to deal with apparently unrelated systems. For example, the heartbeat of people with certain types of potentially lethal arrhythmias seems to be chaotic, and this knowledge may allow more sophisticated monitoring and recognition of the need for intervention. Time will tell what impact these two sub-fields have on more traditional areas of physics as well as on other disciplines.

31. The main idea of this passage can best be summarized as:
- A. The emerging field of complexity is devoted to the experimental study of biological, economic, and cultural systems.
 - B. Chaos and complexity are sophisticated sub-fields of physics that are both gaining legitimacy through better organization.
 - C. The discipline of complexity focuses on complex adaptive systems and, like chaos theory before it, may have relevant applications in many other fields of study.
 - D. The field of traditional physics, now recognized as simplistic, is becoming obsolete and will soon be replaced by complexity and chaos theory.
32. Which of the following most correctly lists examples of complex adaptive systems given in the passage?
- F. The primordial ocean, human culture, fractals, and the Great Red Spot
 - G. Biological evolution, economic systems, science, and language
 - H. Newly observed particles, the behavior of decaying Earth satellites, Pluto's orbit, and arrhythmic heartbeats
 - J. Primordial oceans, politics, human creative thinking, and artificial intelligence
33. Which of the following statements about chaos theory is NOT supported by the passage?
- A. The field of chaos studies systems whose evolution is impossible to predict because of minute reactions to initial conditions.
 - B. Studies of chaos have led to methods for understanding and predicting certain chaotic behaviors from outside the field of physics.
 - C. Chaotic systems may be simple or complex.
 - D. Understanding of thermodynamics and statistical mechanics has evolved through the discipline of chaos.
34. Based on the fifth paragraph (lines 64-77), what is a necessary condition for a system to be considered chaotic?
- F. Its progress over time is impossible to predict accurately.
 - G. It progresses randomly regardless of interactions with related systems.
 - H. It involves the breakdown of cosmic bodies, such as planets or satellites.
 - J. It simultaneously involves phenomena from multiple scientific disciplines.
35. As it is used in line 6, the phrase “unambiguous relationships” most likely refers to:
- A. Predictable interactions between adaptation and evolution.
 - B. Clear and professional communication between physicists that has led to remarkable discoveries.
 - C. Clear and definitive patterns observed during certain physics experiments.
 - D. The predictable behaviors of certain atomic particles.
36. It may reasonably be inferred from the sixth paragraph (lines 78-88) that:
- F. Fractal patterns behave similarly to vortices.
 - G. A system must be complex in order to be considered chaotic.
 - H. Jupiter's Great Red Spot is characteristic of the planet's unpredictable vortices.
 - J. Chaos can include some degree of measurable organization.
37. According to the passage, the relationship between the disciplines of complexity and chaos can be best described by which of the following statements?
- A. The emerging field of complexity, like the field of chaos, has been ostracized by traditional physics.
 - B. Chaos theory has more applications than the field of complexity, particularly in the realm of astronomy and thermodynamics.
 - C. There is some overlap between the two fields, but both attempt to see similar systematics in a very broad range of phenomena.
 - D. Complexity is attempting to define and predict the behavior of systems previously thought chaotic.
38. The main function of the second paragraph (lines 12-25) in relation to the passage as a whole is to:
- F. Show that systems of living organisms are themselves a notable example of complex adaptive systems.
 - G. Provide proof that living entities, even at the unicellular level, are highly organized.
 - H. Illustrate that biological systems adapt and evolve in the same way as economic systems.
 - J. Suggest that self-replication could not have resulted in such a rapid emergence of life without the presence of heat.

- 39.** According to the fourth paragraph (lines 53-63), complex systems:
- A.** Have themselves evolved over time through phase changes and random thermal motion.
 - B.** Have been found to be more random than previously thought by traditional physics.
 - C.** Have provided new ways of understanding some traditional fields such as thermodynamics and non-equilibrium phenomena.
 - D.** Are able to recreate the complex details of atomic and molecular motion patterns.
- 40.** As described in the passage, the root cause of complex adaptive systems can best be summarized as:
- F.** An unambiguous relationship between elements.
 - G.** The ability to self-replicate through artificial intelligence.
 - H.** A kind of inborn evolutionary record.
 - J.** Some fundamental ability to self-organize.

ANSWER KEY IS ON THE NEXT PAGE

ANSWER KEY		
Question #:	Correct Answer	Hint
1	B	One of the keys here is narrative points of view: first-person ('I'), second-person ('you') and third-person ('he/she').
2	J	Do you notice an unexpected contrast between the message and the language used to express it? Notice the exaggerated words used in this paragraph like <i>condescended</i> , <i>elevated</i> , and <i>status</i> .
3	C	Look for a word in the previous sentence that serves as a clue.
4	G	Consider the cause-and-effect link in this sentence signaled by the word <i>therefore</i> .
5	A	Pay attention to which sentences refer specifically to Collins and which do not.
6	J	Focus on what is supported in the text, being careful not to make assumptions.
7	A	Do the details in this paragraph confirm or differ from what we find out about Collins as a character earlier (or later) in the passage?
8	H	If you are unsure of exact definitions, make a guess based on any sense you may have of whether each word has a positive or negative connotation. If any of the choices are synonyms with each other, you can most likely eliminate them.
9	A	Watch out! A few of these choices may seem to be fitting, but choose the one that appears in this paragraph only and nowhere else in the passage.
10	J	Look for the point in the passage when 'the kid' is first introduced. What details are given about him, and what information is left out?
11	C	Break down each choice into its different elements: some relate to intended audience, some to the author's overall tone, and others to the underlying goal of the text. Watch out for key words that may be pulled directly from the passage but used incorrectly.
12	J	Consider the tone or emotion implied by each of the choices. Which seems in keeping with the nature of the example laid out in this paragraph?
13	A	Re-read the full sentence and the one that comes before it in the passage. Look for a key word that would most closely relate to the main nouns <i>motivations</i> , <i>choices</i> , <i>incentives</i> , or <i>decisions</i> mentioned in the four choices.
14	H	Focus on the main verb used in each choice: <i>Provide evidence</i> ; <i>Demonstrate</i> ; <i>Illustrate</i> ; or <i>Support a policy</i> . Does the author use persuasive/argumentative or informative language?
15	B	Scan the paragraph again for the phrase <i>two reasons</i> and re-read closely, using signpost words <i>Firstly</i> and <i>Secondly</i> to isolate the two reasons. The correct choice requires you to interpret a logical conclusion based on given facts, as indicated by the word <i>suggests</i> in the question.
16	G	One choice can be eliminated because it indicates a value judgment on the part of the author, which is not supported by the text. Pay attention to the logical connections and argumentative framework created by the words <i>However</i> , <i>either</i> , and <i>yet</i> .
17	D	Re-read the final sentence of the paragraph that introduces <i>sunk cost fallacy</i> (lines 62-65).

18	F	The topic sentence of this paragraph should provide a good clue. But watch out! One of the choices seems to fit, but is incorrect because it appears in another paragraph as well as this one.
19	B	Re-read the sentence in question and the remainder of the last paragraph. Focus on evaluative adjectives used by the author that would indicate his assessment of this tool. Consider how the positive/negative connotations line up with the choices given.
20	H	Economic models are mentioned in the second paragraph, but the focus is on self-interested <i>homo economicus</i> . The last paragraph is the only one that addresses a view of models in general.
21	B	Re-read paragraph four (lines 36-56). You'll find statements that directly contradict two of the given choices, so you can eliminate them. The elements of the correct choice are found in this paragraph as well, though some interpretation or restatement on is required.
22	F	Re-read the full sentence, as well as the one that comes before it. Watch out for relevant key words used in illogical ways in incorrect choices.
23	C	Re-read the third paragraph (lines 18-35), focusing on the last few sentences.
24	G	Scan the passage to find a paragraph that discusses <i>cognitive mechanisms</i> (the third paragraph). Re-read the paragraph, looking for synonyms of key words used in the choices.
25	D	Be careful! The main noun used in each choice (<i>metaphor, real-life example, parable, illustrative allegory</i>) could all potentially be appropriate, so focus instead on the relationship between specific ideas. Re-read the three sentences that precede this one (lines 63-70), looking for key words from the choices.
26	F	Carefully re-read lines 71-79. Watch out for wrong choices that make use of key words from the paragraph in incorrect ways.
27	C	Read the four choices before re-reading the paragraph. One of the choices is directly contradicted by the information in the paragraph.
28	J	The four choices all mention either <i>culture</i> or <i>history</i> . Re-read the paragraph looking for an underlying position or argument presented by the author about the true meaning of those two concepts. Two of the choices relate to ideas that are not mentioned in the paragraph.
29	B	Scan the passage for a sentence that mentions both <i>brain structure</i> and <i>social learning</i> , and then read the sentence before it as well (lines 51-56). Be careful in determining the cause-and-effect relationship expressed here.
30	F	Proceed with caution! All of the choices could be supported by the passage, so your task is to determine which one is the author's central hypothesis, or main argument.
31	C	You can often find a summary of the main idea in the last paragraph of a passage. Watch out for relevant key words being used in incorrect ways in the wrong choices.
32	G	Lists can be tricky! Often, you will find that all but one of the items in the list are correct, so be sure to read each list carefully and fully. Consider whether any of the items are actually examples of some other concept from the passage other than <i>complex adaptive systems</i> .
33	D	Read the choices carefully for one that actually refers to the discipline of chaos rather than complexity.
34	F	Because the question specifies a <i>necessary condition</i> , that means you'll be looking for the most basic definition of chaotic systems, most likely to be found in the first or second sentence of the given paragraph.

35	C	Pay very close attention to the adjectives used in the choices, such as <i>predictable</i> , <i>clear</i> , <i>definitive</i> , and <i>professional</i> . Two of them are more closely connected to the phrase in the question.
36	J	The first and third sentences of the paragraph in question should serve to point you to the correct choice.
37	C	This question type requires synthesis of information given throughout the passage. Be especially careful of overly strong words or unsupported comparisons. Read each choice fully and closely, as some will be <i>almost</i> correct, except for one incorrect key word.
38	F	In the given choices, look for a statement that connects the given paragraph to the main subject of the passage as a whole.
39	C	The first and last sentences of the paragraph often provide the clearest statement of the main idea.
40	J	The most direct paraphrase of the correct choice can be found in the second paragraph, and is also developed through numerous examples in the third paragraph.

Scoring Guide	
Estimated Score	Number Correct
36	39-40
35	38
34	37
33	36
32	35
31	34
30	33
29	32
28	32
27	30
26	29
25	27-28
24	26
23	25
22	24
21	23
20	22
19	20-21
18	19
17	18
16	16-17
15	15

14	14
13	12-13
12	10-11
11	8-9
10	7
9	6
8	5
7	-
6	4
5	3
4	2
3	-
2	1
1	0