新 GRE 阅读理解 36 套

GRE–RC–36 (2014.01)

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目　　录

提　示

1. 文章篇幅、文章与题目难度、文字界面等均可能与正式考试存在差别。使用本材料训练者请遵循风险自担原则。但同时，编者已经尽可能使本材料符合最新的实际考试情况。

2. 机考的一个语文 Section 会有填空题和阅读题各 10 道。10 道填空题中包含 3-4 道 6 选 2 的同义词填空题和 6-7 道正常填空题（5 选 1 填空以及多空格填空），10 道阅读题中包含 1-2 道逻辑单题与 8-9 道正常阅读题。这里的每个练习（Exercise）仅反映一个语文 Section 的阅读部分，并不包含其中的填空。为增加训练难度，本材料经常连续 2 个 Section 都出现长文章；近年考试每个语文 Section 都出现长文章的情况看来正在增多。每个 section 或许会有同义词题 0-1 道；但考虑到同义词题较容易，故减少出题率。考试时电脑界面或许出现高亮句子或短语，本练习材料未能在形式上完全反映。以上或更多可能存在的差别，请考生留意。

3. 练习 Exercise1-16 有 4-5 篇文章，12-13 道题，与笔试情况相符，可作为基础训练材料。从练习 17 开始，每个练习有 10 道题，涉及 4 篇文章（1 篇长文章 3 篇短文章、或 1 篇中篇文章 3 篇短文章、或 4 篇皆为短文章）和 1-2 个逻辑单题的短文章，与现有的机考情况相符，可作为模拟训练材料。

4. 训练可以多阶段进行，每 8-9 个练习为一个阶段，每个阶段约为 50-100 小时；36 套练习可在 4-5 个阶段完成，总计用时约 300-350 小时。在刚开始的阶段，一个练习的做题时间通常为 30-45 分钟，正确率为 25%。第二阶段，时间可控制在 25-27 分钟/练习，正确率接近 40%。第三阶段，时间控制在 21-22 分钟/练习，正确率 50%-60%。第四阶段，时间控制在 17-18 分钟/练习，正确率 70%以上。

5. 建议以 2-4 个练习为单位进行循环训练，对这些练习从不同角度进行多个步骤的训练。第一步，在计时状态下连续做掉 2-4 个练习。每个练习的时间应按训练阶段逐步减少，最终达到考试要求的 17 分钟。第二步，在做完这些练习的同一天或第二天，分析这些文章的逻辑结构，弄懂所有句子之间的关系，也就是论点与论点的关系、论点与论据的关系、论据与论据的关系，并写出反映文章结构的逻辑图，包括每句话尤其是首句转折句的核心词（core）、每句话的功能作用（function）。请注意，这一步不是重做题目，而是分析结构。第三步，在做完逻辑结构分析和写出逻辑图以后，进行这些练习的题目分析，包括题干的定位、题目对应原文的位置特点、正确选项与原文的文字对应和逻辑改写方式、选项出错的原因，以对出题点、正确答案写法、错误选项设置形成敏感。第四步是可选步骤，将这几个练习的文章和题目重看一遍。这些步骤完成之后再转向新的 2-4 练习，依次下去。尽量避免一口气做完所有练习；连续做新题只能重复现有解题水平，只有重复分析文章和题目才能提高解题水平。

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Exercise 1

Questions 1 to 3 are based on the following reading passage.

Immediately relevant to game theory are the sex ratios in certain parasitic wasp species that have a large excess of females. In these species, fertilized eggs develop into females and unfertilized eggs into males. A female stores sperm and can determine the sex of each egg she lays by fertilizing it or leaving it unfertilized. By Fisher's genetic argument that the sex ratio will be favored which maximizes the number of descendants an individual will have and hence the number of gene copies transmitted, it should pay a female to produce equal numbers of sons and daughters. Hamilton, noting that the eggs develop within their host—the larva of another insect—and that the newly emerged adult wasps mate immediately and disperse, offered a remarkably cogent analysis. Since only one female usually lays eggs in a given larva, it would pay her to produce one male only, because this one male could fertilize all his sisters on emergence. Like Fisher, Hamilton looked for an evolutionarily stable strategy, but he went a step further in *recognizing* that he was looking for a strategy.

1. The author suggests that the work of Fisher and Hamilton was similar in that both scientists
(A) conducted their research at approximately the same time
(B) sought to manipulate the sex ratios of some of the animals they studied
(C) sought an explanation of why certain sex ratios exist and remain stable
(D) studied game theory, thereby providing important groundwork for the later development of strategy theory
(E) studied reproduction in the same animal species

For the following question, consider each of the choices separately and select all that apply

2. The passage contains information that would answer which of the following questions about wasps?
Ⅰ How many eggs does the female wasp usually lay in a single host larva?
Ⅱ Can some species of wasp determine sex ratios among their offspring?
Ⅲ What is the approximate sex ratio among the offspring of parasitic wasps?

3. Which of the following is NOT true of the species of parasitic wasps discussed in the passage?
(A) Adult female wasps are capable of storing sperm.
(B) Female wasps lay their eggs in the larvae of other insects.
(C) The adult female wasp can be fertilized by a male that was hatched in the same larva as herself.
(D) So few male wasps are produced that extinction is almost certain.
(E) Male wasps do not emerge from their hosts until they reach sexual maturity.

Questions 4 to 5 are based on the following reading passage.

Tocqueville, apparently, was wrong. Jacksonian America was not a fluid, egalitarian society where individual wealth and poverty were ephemeral
Line conditions. At least to argues E. Pessen in his
5 iconoclastic study of the very rich in the United States between 1825 and 1850.

Pessen does present a quantity of examples, together with some refreshingly intelligible statistics, to establish the existence of an inordinately wealthy class. Though
10 active in commerce or the professions, most of the wealthy were not self-made, but had inherited family fortunes. In no sense mercurial, these great fortunes survived the financial panics that destroyed lesser ones. Indeed, in several cities the wealthiest one percent
15 constantly increased its share until by 1850 it owned half of the community's wealth. Although these observations are true, Pessen overestimates their importance by concluding from them that the undoubted progress toward inequality in the late eighteenth century
20 continued in the Jacksonian period and that the United States was a class-ridden, plutocratic society even before industrialization. (162 words)

4. According to the passage, Pessen indicates that all of the following were true of the very wealthy in the United States between 1825 and 1850 EXCEPT:

(A) They formed a distinct upper class.
(B) Many of them were able to increase their holdings.
(C)Some of them worked as professionals or in business.
(D) Most of them accumulated their own fortunes.
(E) Many of them retained their wealth in spite of financial upheavals.

5. Which of the following best states the author's main point?

(A) Pessen's study has overturned the previously established view of the social and economic structure of early nineteenth-century America.
(B) Tocqueville's analysis of the United States in the Jacksonian era remains the definitive account of this period.
(C) Pessen's study is valuable primarily because it shows the continuity of the social system in the United States throughout the nineteenth century.
(D) The social patterns and political power of the extremely wealthy in the United States between 1825 and 1850 are well documented.
(E) Pessen challenges a view of the social and economic system in the United States from 1825 to 1850, but he draws conclusions that are incorrect.

Anaerobic glycolysis is a process in which energy is produced, without oxygen, through the breakdown of muscle glycogen into lactic acid and adenosine tri-
Line phosphate (ATP), the energy provider. The amount
5 of energy that can be produced anaerobically is a function of the amount of glycogen present—in all vertebrates about 0.5 percent of their muscles' wet weight. Thus the anaerobic energy reserves of a verte-brate are proportional to the size of the animal. If, for
10 example, some predators had attacked a 100-ton dinosaur, normally torpid, the dinosaur would have been able to generate almost instantaneously, via anaerobic glycolysis, the energy of 3,000 humans at maximum oxidative metabolic energy production.

6. The passage's suggestion that the total anaerobic energy reserves of a vertebrate are proportional to the vertebrate's size is based on which of the following assumption?

(A) larger vertebrates conserve more energy than smaller vertebrates

(B) larger vertebrates use less oxygen per unit weight than smaller vertebrates

(C) the ability of a vertebrate to consume food is a function of its size

(D) the amount of muscle tissue in a vertebrate is directly related to its size

(E) the size of a vertebrate is proportional to the quantity of energy it can utilize

Extraordinary creative activity has been characterized as revolutionary, flying in the face of what is established and producing not what is acceptable but what will become accepted. According to this formulation, highly creative activity transcends the limits of an existing form and establishes a new principle of organization. However, the idea that extraordinary creativity transcends established limits in misleading when it is applied to the arts, even though it may be valid for the sciences.

Difference between highly creative art and highly creative science arise in part from a difference in their goals. For the sciences, a new theory is the goal and end result of the creative act. Innovative science produces new propositions in terms of which diverse phenomena can be related to one another in more coherent ways. Such phenomena as a brilliant diamond or a nesting bird are relegated to the role of data, serving as the means for formulating or testing a new theory. The goal of highly creative art is very different: the phenomenon itself becomes the direct product of the creative act. Shakespeare's *Hamlet* is not a tract about the behavior of indecisive princes or the uses of political power; nor is Picasso's painting *Guernica* primarily a propositional statement about the Spanish Civil War or the evils of fascism. What highly creative artistic activity produces is not a new generalization that transcends established limits, but rather an aesthetic particular. Aesthetic particulars produced by the highly creative artist extend or exploit, in an innovative way, the limits of an existing form, rather than transcend that form.

This is not to deny that a highly creative artist sometimes establishes a new principle of organization in the history of an artistic field; the composer Monteverdi, who created music of the highest aesthetic value, comes to mind. More generally, however, whether or not a composition establishes a new principle in the history of music has little bearing on its aesthetic worth. Because they embody a new principle of organization, some musical works, such as the operas of the Florentine Camerata, are of signal historical importance, but few listeners or musicologists would include these among the great works of music. On the other hand, Mozart's *The Marriage of Figaro* is surely among the masterpieces of music even though its modest innovations are confined to extending existing means. It has been said of Beethoven that he toppled the rules and freed music from the stifling confines of convention. But a close study of his compositions reveals that Beethoven overturned no fundamental rules. Rather, he was an incomparable strategist who exploited limits—the rules, forms, and conventions that he inherited from predecessors such as Haydn and Mozart, Handel and Bach—in strikingly original ways.

(466words)

For the following question, consider each of the choices separately and select all that apply

7. The passage supplies information for answering which of the following questions?

A Has unusual creative activity been characterized as revolutionary?

B Did Beethoven work within a musical tradition that also included Handel and Bach?

C Who besides Monteverdi wrote music that the author would consider to embody new principles of organization and to be of high aesthetic value?

8. The author regards the idea that all highly creative artistic activity transcends limits with

(A) deep skepticism
(B) strong indignation
(C) marked indifference
(D) moderate amusement
(E) sharp derision

9. The author implies that an innovative scientific contribution is one that

(A) is cited with high frequency in the publications of other scientists
(B) is accepted immediately by the scientific community
(C) does not relegate particulars to the role of data
(D) presents the discovery of a new scientific fact
(E) introduces a new valid generalization

10. Which of the following statements would most logically concluded the last paragraph of the passage?

(A) Unlike Beethoven, however, even the greatest of modern composers, such as Stravinsky, did not transcend existing musical forms.
(B) In similar fashion, existing musical forms were even further exploited by the next generation of great European composers.
(C) Thus, many of the great composers displayed the same combination of talents exhibited by Monteverdi.
(D) By contrast, the view that creativity in the arts exploits but does not transcend limits is supported in the field of literature.
(E) Actually, Beethoven's most original works were largely unappreciated at the time that they were first performed.

Great comic art is never otherwordly, it does not seek to mystify us, and it does not deny ambiguity by branding as evil whatever differs from good. Great comic artists assume that truth may bear all lights, and thus they seek to accentuate contradictions in social action, not gloss over or transcend them by appeals to extrasocial symbols of divine ends, cosmic purpose, or laws of nature. The moment of transcendence in great comic art is a social moment, born out of the conviction that we are human, even though we try to be gods. The comic community to which artists address themselves is a community of reasoning, loving, joyful, compassionate beings, who are willing to assume the human risks of acting rationally. Without invoking gods or demons, great comic art arouses courage in reason, courage which grows out of trust in what human beings can do as humans.

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11. Select the sentence in the passage that suggests that great comic art can be characterized as optimistic about the ability of humans to act rationally.

12. It can be inferred from the passage that the author admires great comic artists primarily for their
    (A) ability to understand the frequently subtle differences between good and evil
    (B) ability to reconcile the contradictions in human behavior
    (C) ability to distinguish between rational and irrational behavior
    (D) insistence on confronting the truth about the human condition
    (E) insistence on condemning human faults and weaknesses

13. Which of the following is the most accurate description of the organization of the passage?
    (A) A sequence of observations leading to a prediction
    (B) A list of inferences drawn from facts stated at the beginning of the passage
    (C) A series of assertions related to one general subject
    (D) A statement of the major idea, followed by specific examples
    (E) A succession of ideas moving from specific to general

Exercise 2

By 1950, the results of attempts to relate brain processes to mental experience appeared rather discouraging. Herring suggested that different modes of
Line sensation, such as pain, taste, and color, might be
5 correlated with the discharge of specific kinds of nervous energy. However, subsequently developed methods of recording and analyzing nerve potentials failed to reveal any such qualitative diversity. Although qualitative variance among nerve energies was never rigidly
10 disproved, the doctrine was generally abandoned in favor of the opposing view, namely, that nerve impulses are essentially homogeneous in quality and are transmitted as "common currency" throughout the nervous system. According to this theory, it is not the quality of the
15 sensory nerve impulses that determines the diverse conscious sensations they produce, but rather the different areas of the brain into which they discharge, and there is some evidence for this view. In one experiment, when an electric stimulus was applied to a given sensory field of
20 the cerebral cortex of a conscious human subject, it produced a sensation of the appropriate modality for that particular locus, that is, a visual sensation from the visual cortex, an auditory sensation from the auditory cortex, and so on. However, cortical locus, in itself, turned out to
25 have little explanatory value.

1. The author mentions "common currency" in line 13 primarily in order to emphasize the
   (A) lack of differentiation among nerve impulses in human beings
   (B) similarity of the sensations that all human beings experience
   (C) similarities in the views of scientists who have studied the human nervous system
   (D) continuous passage of nerve impulses through the nervous system
   (E) recurrent questioning by scientists of an accepted explanation about the nervous system

2. The description of an experiment in which electric stimuli were applied to different sensory fields of the cerebral cortex tends to support the theory that
   (A) the simple presence of different cortical areas cannot account for the diversity of mental experience
   (B) variation in spatiotemporal patterning of nerve impulses correlates with variation in subjective experience
   (C) nerve impulses are essentially homogeneous and are relatively unaffected as they travel through the nervous system
   (D) the mental experiences produced by sensory nerve impulses are determined by the cortical area activated
   (E) variation in neuron types affects the quality of nerve impulses

3. Which of the following best summarizes the author's opinion of the suggestion that different areas of the brain determine perceptions produced by sensory nerve impulses?
   (A) It is a plausible explanation, but it has not been completely proved.
   (B) It is the best explanation of brain processes currently available.
   (C) It is disproved by the fact that the various areas of the brain are physiologically very similar.
   (D) There is some evidence to support it, but it fails to explain the diversity of mental experience.
   (E) There is experimental evidence that confirms its correctness.

A Marxist sociologist has argued that racism stems from the class struggle that is unique to the capitalist system—that racial prejudice is generated by capitalists as a means of controlling workers. His thesis works relatively well when applied to discrimination against Blacks in the United States, but his definition of racial prejudice as "racially-based negative prejudgments against a group generally accepted as a race in any given region of ethnic competition," can be interpreted as also including hostility toward such ethnic groups as the Chinese in California and the Jews in medieval Europe. However, since prejudice against these latter peoples was not inspired by capitalists, he has to reason that such antagonisms were not really based on race. He disposes thusly (albeit unconvincingly) of both the intolerance faced by Jews before the rise of capitalism and the early twentieth-century discrimination against Oriental people in California, which, inconveniently, was instigated by workers.

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4. The passage supplies information that would answer which of the following questions EXCEPT?

Ⅰ What conditions caused the discrimination against Oriental people in California in the early twentieth century?

Ⅱ What evidence did the Marxist sociologist provide to support his thesis?

Ⅲ What explanation did the Marxist sociologist give for the existence of racial prejudice?

5. According to the passage, the Marxist sociologist's chain of reasoning required him to assert that prejudice toward Oriental people in California was

(A) directed primarily against the Chinese
(B) similar in origin to prejudice against the Jews
(C) understood by Oriental people as ethnic competition
(D) provoked by workers
(E) nonracial in character

It would be wonderful to observe a singularity (an infinitely dense concentration of matter) and obtain direct evidence of the undoubtedly bizarre phenomena that occur near one. Unfortunately, in most cases a distant observer cannot see the singularity; outgoing light rays are dragged back by gravity so forcefully that even if they could start out within a few kilometers of the singularity, they would end up in the singularity itself.

6. Which of the following sentences would most probably follow the last sentence of the passage?
   (A) Thus, a physicist interested in studying phenomena near singularities would necessarily hope to find a singularity with a measurable gravitational field.
   (B) Accordingly, physicists to date have been unable to observe directly any singularity.
   (C) It is specifically this startling phenomenon that has allowed us to codify the scant information currently available about singularities.
   (D) Moreover, the existence of this extra-ordinary phenomenon is implied in the extensive reports of several physicists.
   (E) Although unanticipated, phenomena such as these are consistent with the structure of a singularity.

The evolution of intelligence among early large mammals of the grasslands was due in great measure to the interaction between two ecologically synchronized groups of these animals, the hunting carnivores and the herbivores that they hunted. The interaction resulting from the differences between predator and prey led to a general improvement in brain functions; however, certain components of intelligence were improved far more than others.

The kind of intelligence favored by the interplay of increasingly smarter catchers and increasingly keener escapers is defined by attention—that aspect of mind carrying consciousness forward from one moment to the next. It ranges from a passive, free-floating awareness to a highly focused, active fixation. The range through these states is mediated by the arousal system, a network of tracts converging from sensory systems to integrating centers in the brain stem. From the more relaxed to the more vigorous levels, sensitivity to novelty is increased. The organism is more awake, more vigilant; this increased vigilance results in the apprehension of ever more subtle signals as the organism becomes more sensitive to its surroundings. The processes of arousal and concentration give attention its direction. Arousal is at first general, with a flooding of impulses in the brain stem; then gradually the activation is channeled. Thus begins concentration, the holding of consistent images. One meaning of intelligence is the way in which these images and other alertly searched information are used in the context of previous experience. Consciousness links past attention to the present and permits the integration of details with perceived ends and purposes.

The elements of intelligence and consciousness come together marvelously to produce different styles in predator and prey. Herbivores and carnivores develop different kinds of attention related to escaping or chasing. Although in both kinds of animal, arousal stimulates the production of adrenaline and norepinephrine by the adrenal glands, the effect in herbivores is primarily fear, whereas in carnivores the effect is primarily aggression. For both, arousal attunes the animal to what is ahead. Perhaps it does not experience forethought as we know it, but the animal does experience something like it. The predator is searchingly aggressive, inner-directed, tuned by the nervous system and the adrenal hormones, but aware in a sense closer to human consciousness than, say, a hungry lizard's instinctive snap at a passing beetle. Using past events as a framework, the large mammal predator is working out a relationship between movement and food, sensitive to possibilities in cold trails and distant sounds—and yesterday's unforgotten lessons. The herbivore prey is of a different mind. Its mood of wariness rather than searching and its attitude of general expectancy instead of anticipating are silk-thin veils of tranquility over an explosive endocrine system.

7. The author refers to a hungry lizard (line 47) primarily in order to

(A) demonstrate the similarity between the hunting methods of mammals and those of nonmammals

(B) broaden the application of his argument by including an insectivore as an example

(C) make a distinction between higher and lower levels of consciousness

(D) provide an additional illustration of the brutality characteristic of predators

(E) offer an objection to suggestions that all animals lack consciousness

8. It can be inferred from the passage that in animals less intelligent than the mammals discussed in the passage

(A) past experience is less helpful in ensuring survival

(B) attention is more highly focused

(C) muscular coordination is less highly developed

(D) there is less need for competition among species

(E) environment is more important in establishing the proper ratio of prey to predator

9. The author provides information that would answer which of the following questions?

Ⅰ. Why is an aroused herbivore usually fearful?

Ⅱ. What are some of the degrees of attention in large mammals?

Ⅲ. What occurs when the stimulus that causes arousal of a mammal is removed?

10. According to the passage, as the process of arousal in an organism continues, all of the following may occur EXCEPT

(A) the production of adrenaline

(B) the production of norepinephrine

(C) a heightening of sensitivity to stimuli

(D) an increase in selectivity with respect to stimuli

(E) an expansion of the range of states mediated by the brain stem

Gutman's examination of the slaves' extended kinship system produces important findings. Gutman discovers that cousins rarely married, an exogamous tendency that
Line contrasted sharply with the endogamy practiced by the
5 plantation owners. This preference for exogamy, Gutman suggests, may have derived from West African rules governing marriage, which, though they differed from one tribal group to another, all involved some kind of prohibition against unions with close kin. This taboo
10 against cousins' marrying is important, argues Gutman, because it is one of many indications of a strong awareness among slaves of an extended kinship network. The fact that distantly related kin would care for children separated from their families also suggests this
15 awareness. When blood relationships were few, as in newly created plantations in the Southwest, "fictive" kinship arrangements took their place until a new pattern of consanguinity developed. Gutman presents convincing evidence that this extended kinship structure—which he
20 believes developed by the mid-to-late eighteenth century—provided the foundations for the strong communal consciousness that existed among slaves.

11. According to the passage, all of the following are true of the West African rules governing marriage:

Ⓐ The rules forbade marriages between close kin.
Ⓑ The rules were not uniform in all respects from one West African tribe to another.
Ⓒ The rules have been considered to be a possible source of slaves' marriage preferences.

12. Which of the following statements concerning the marriage practices of plantation owners during the period of Black slavery in the United States can most logically be inferred from the information in the passage.
(A) These practices began to alter sometime around the mid-eighteenth century.
(B) These practices varied markedly from one region of the country to another.
(C) Plantation owners usually based their choice of marriage partners on economic considerations.
(D) Plantation owners often married earlier than slaves.
(E) Plantation owners often married their cousins.

13. Select the sentence in the passage that the author introduces additional support for the existence of the awareness of kinship among the slaves of an extended kinship network.

Exercise 3

The dark regions in the starry night sky are not pockets in the universe that are devoid of stars as had long been thought. Rather, they are dark because
Line of interstellar dust that hides the stars behind it.
5 Although its visual effect is so pronounced, dust is only a minor constituent of the material, extremely low in density, that lies between the stars. The average density of interstellar material in the vicinity of our Sun is 1,000 to 10,000 times less than the best terrestrial
10 laboratory vacuum. It is only because of the enormous interstellar distances that so little material per unit of volume becomes so significant. Optical astronomy is most directly affected, for although interstellar gas is perfectly transparent, the dust is not. (125 words)

1. According to the passage, which of the following is a direct perceptual consequence of interstellar dust EXCEPT?

Ⓐ Some stars are rendered invisible to observers on Earth.
Ⓑ Many visible stars are made to seem brighter than they really are.
Ⓒ The dust is conspicuously visible against a background of bright stars.

2. It can be inferred from the passage that it is because space is so vast that
(A) little of the interstellar material in it seems substantial
(B) normal units of volume seem futile for measurements of density
(C) stars can be far enough from Earth to be obscured even by very sparsely distributed matter
(D) interstellar gases can, for all practical purposes, be regarded as transparent
(E) optical astronomy would be of little use even if no interstellar dust existed

In Hardy's novels, various impulses were sacrificed to each other inevitably and often. Inevitably, because Hardy did not care in the way that novelists such as Flaubert or James cared, and therefore took paths of least resistance. Thus, one impulse often surrendered to a fresher one and, unfortunately, instead of exacting a compromise, simply disappeared. A desire to throw over reality a light that never was might give way abruptly to the desire on the part of what we might consider a novelist-scientist to record exactly and concretely the structure and texture of a flower. In this instance, the new impulse was at least an energetic one, and thus its indulgence did not result in a relaxed style. But on other occasions Hardy abandoned a perilous, risky, and highly energizing impulse in favor of what was for him the fatally relaxing impulse to classify and schematize abstractly. When a relaxing impulse was indulged, the style—that sure index of an author's literary worth—was certain to become verbose. (167 words)

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3. Which of the following words could best be substituted for "relaxed" (line 13) without substantially changing the author's meaning?
   (A) informal
   (B) confined
   (C) risky
   (D) wordy
   (E) metaphoric

4. The passage supplies information to suggest that its author would be most likely to agree with which of the following statements about the novelists Flaubert and James?
   (A) They indulged more impulses in their novels than did Hardy in his novels.
   (B) They have elicited a greater degree of favorable response from most literary critics than has Hardy.
   (C) In the writing of their novels, they often took pains to effect a compromise among their various novelistic impulses.
   (D) Regarding novelistic construction, they cared more about the opinions of other novelists than about the opinions of ordinary readers.
   (E) They wrote novels in which the impulse toward realism and the impulse away from realism were evident in equal measure.

5. Which of the following statements best describes the organization of the passage ("Thus…abstractly")?
   (A) The author makes a disapproving observation and then presents two cases, one of which leads to a qualification of his disapproval and the other of which does not.
   (B) The author draws a conclusion from a previous statement, explains his conclusion in detail, and then gives a series of examples that have the effect of resolving an inconsistency.
   (C) The author concedes a point and then makes a counterargument, using an extended comparison and contrast that qualifies his original concession.
   (D) The author makes a judgment, points out an exception to his judgment, and then contradicts his original assertion.
   (E) The author summarizes and explains an argument and then advances a brief history of opposing arguments.

A mysterious phenomenon is the ability of over-water migrants to travel on course. Birds, bees, and other species can keep track of time without any sensory cues
Line from the outside world, and such "biological clocks"
5 clearly contribute to their "compass sense." For example, they can use the position of the Sun or stars, along with the time of day, to find north. But compass sense alone cannot explain how birds navigate the ocean: after a flock traveling east is blown far south by a storm, it will
10 assume the proper northeasterly course to compensate. Perhaps, some scientists thought, migrants determine their geographic position on Earth by celestial navigation, almost as human navigators use stars and planets, but this would demand of the animals a fantastic map sense.
15 Researchers now know that some species have a magnetic sense, which might allow migrants to determine their geographic location by detecting variations in the strength of the Earth's magnetic field. (157 words)

6. The main idea of the passage is that
   (A) migration over land requires a simpler explanation than migration over water does
   (B) the means by which animals migrate over water are complex and only partly understood
   (C) the ability of migrant animals to keep track of time is related to their magnetic sense
   (D) knowledge of geographic location is essential to migrants with little or no compass sense
   (E) explanations of how animals migrate tend to replace, rather than build on, one another

7. It can be inferred from the passage that if the flock of birds described in lines 8-9 were navigating by compass sense alone, they would, after the storm, fly
   (A) east (B) north (C) northwest
   (D) south (E) southeast

8. Of the following descriptions of migrating animals, which most strongly suggests that the animals are depending on magnetic cues to orient themselves?
   (A) Pigeons can properly readjust their course even when flying long distances through exceedingly dense fogs.
   (B) Bison are able to reach their destination by passing through a landscape that has been partially altered by a recent fire.
   (C) Elephants are able to find grounds that some members of the herd have never seen before.
   (D) Swallows are able to return to a given spot at the same time every year.
   (E) Monarch butterflies coming from different parts of North America are able to arrive at the same location each winter.

Starting from the premise that mythology and legend preserve at least a nucleus of historical fact, Bachofen argued that women were dominant in many ancient societies. His work was based on a comprehensive survey of references in the ancient sources to Amazonian and other societies with matrilineal customs—societies in which descent and property rights are traced through the female line. Some support for his theory can be found in evidence such as that drawn from Herodotus, the Greek "historian" of the fifth century B. C. Nonetheless, this assumption that the first recorders of ancient myths have preserved facts is problematic. Ancient Greek descriptions of those societies were meant not so much to represent observed historical fact—real Amazonian societies—but rather to offer "moral lessons" on the supposed outcome of women's rule in their own society. The Amazons were often characterized, for example, as the equivalents of giants and centaurs, enemies to be slain by Greek heroes; thus, their customs were presented not as those of a respectable society, but as the very antitheses of ordinary Greek practices. (179 words)

Line
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9. The primary purpose of the passage is to
   (A) compare competing new approaches to understanding the role of women in ancient societies
   (B) investigate the ramifications of Bachofen's theory about the dominance of women in ancient societies
   (C) explain the burgeoning interest among historians in determining the actual status of women in various societies
   (D) analyze the nature of Amazonian society and uncover similarities between it and the Greek world
   (E) criticize the value of ancient myths in determining the status of women in ancient societies

10. Select the sentence in the passage that is presented as evidence supporting the author's view of the ancient Greeks' descriptions of the Amazons.

11. The author's attitude toward Bachofen's treatise is best described as one of
   (A) qualified approval
   (B) profound ambivalence
   (C) studied neutrality
   (D) pointed disagreement
   (E) unmitigated hostility

Visual recognition involves storing and retrieving memories. Neural activity, triggered by the eye, forms an image in the brain's memory system that constitutes an internal representation of the viewed object. When an object is encountered again, it is matched with its internal representation and thereby recognized. Controversy surrounds the question of whether recognition is a parallel, one-step process or a serial, step-by-step one. Psychologists of the Gestalt school maintain that objects are recognized as wholes in a parallel procedure: the internal representation is matched with the retinal image in a single operation. Other psychologists have proposed that internal representation features are matched serially with an object's features. Although some experiments show that, as an object becomes familiar, its internal representation becomes more holistic and the recognition process correspondingly more parallel, the weight of evidence seems to support the serial hypothesis, at least for objects that are not notably simple and familiar.

(151 words)

12. The author is primarily concerned with
(A) explaining how the brain receives images
(B) synthesizing hypotheses of visual recognition
(C) examining the evidence supporting the serial-recognition hypothesis
(D) discussing visual recognition and some hypotheses proposed to explain it
(E) reporting on recent experiments dealing with memory systems and their relationship to neural activity

For the following question, consider each of the choices separately and select all that apply

13. According to the passage, Gestalt psychologists make which of the following suppositions about visual recognition?
Ⅰ A retinal image is in exactly the same forms as its internal representation.
Ⅱ An object is recognized as a whole without any need for analysis into component parts.
Ⅲ The matching of an object with its internal representation occurs in only one step.

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Exercise 4

It is a popular misconception that nuclear fusion power is free of radioactivity; in fact, the deuterium-tritium reaction that nuclear scientists are currently exploring with such zeal produces both alpha particles and neutrons. (The neutrons are used to produce tritium from a lithium blanket surrounding the reactor.) Another common misconception is that nuclear fusion power is a virtually unlimited source of energy because of the enormous quantity of deuterium in the sea. Actually, its limits are set by the amount of available lithium, which is about as plentiful as uranium in the Earth's crust. Research should certainly continue on controlled nuclear fusion, but no energy program should be premised on its existence until it has proven practical. (122 words)

1. It can be inferred from the passage that the author believes which of the following about the current state of public awareness concerning nuclear fusion power?
   (A) The public has been deliberately misinformed about the advantages and disadvantages of nuclear fusion power.
   (B) The public is unaware of the principal advantage of nuclear fusion over nuclear fission as an energy source.
   (C) The public's awareness of the scientific facts concerning nuclear fusion power is somewhat distorted and incomplete.
   (D) The public is not interested in increasing its awareness of the advantages and disadvantages of nuclear fusion power.
   (E) The public is aware of the disadvantages of nuclear fusion power but not of its advantages.

For the following question, consider each of the choices separately and select all that apply

2. The passage provides information that would answer which of the following questions EXCEPT?

Ⓐ How much incidental radiation is produced in the deuterium tritium fusion reaction?
Ⓑ What is likely to be the principal source of deuterium for nuclear fusion power?
Ⓒ Why are scientists exploring the deuterium-tritium fusion reaction with such zeal?

Roger Rosenblatt's book *Black Fiction*, in attempting to apply literary rather than sociopolitical criteria to its subject, successfully alters the approach taken by most previous studies. As Rosenblatt notes, criticism of Black writing has often served as a pretext for expounding on Black history. Addison Gayle's recent work, for example, judges the value of Black fiction by overtly political standards, rating each work according to the notions of Black identity which it propounds.

Although fiction assuredly springs from political circumstances, its authors react to those circumstances in ways other than ideological, and talking about novels and stories primarily as instruments of ideology circumvents much of the fictional enterprise. Rosenblatt's literary analysis discloses affinities and connections among works of Black fiction which solely political studies have overlooked or ignored.

Writing acceptable criticism of Black fiction, however, presupposes giving satisfactory answers to a number of questions. First of all, is there a sufficient reason, other than the racial identity of the authors, to group together works by Black authors? Second, how does Black fiction make itself distinct from other modern fiction with which it is largely contemporaneous? Rosenblatt shows that Black fiction constitutes a distinct body of writing that has an identifiable, coherent literary tradition. Looking at novels written by Blacks over the last eighty years, he discovers recurring concerns and designs independent of chronology. These structures are thematic, and they spring, not surprisingly, from the central fact that the Black characters in these novels exist in a predominantly White culture, whether they try to conform to that culture or rebel against it.

Black Fiction does leave some aesthetic questions open. Rosenblatt's thematic analysis permits considerable objectivity; he even explicitly states that it is not his intention to judge the merit of the various works—yet his reluctance seems misplaced, especially since an attempt to appraise might have led to interesting results. For instance, some of the novels appear to be structurally diffuse. Is this a defect, or are the authors working out of, or trying to forge, a different kind of aesthetic? In addition, the style of some Black novels, like Jean Toomer's *Cane*, verges on expressionism or surrealism; does this technique provide a counterpoint to the prevalent theme that portrays the fate against which Black heroes are pitted, a theme usually conveyed by more naturalistic modes of expression?

In spite of such omissions, what Rosenblatt does include in his discussion makes for an astute and worthwhile study. *Black Fiction* surveys a wide variety of novels, bringing to our attention in the process some fascinating and little-known works like James Weldon Johnson's *Autobiography of an Ex-Colored Man*. Its argument is tightly constructed, and its forthright, lucid style exemplifies levelheaded and penetrating criticism.

3. The author of the passage objects to criticism of Black fiction like that by Addison Gayle because it
   (A) emphasizes purely literary aspects of such fiction
   (B) misinterprets the ideological content of such fiction
   (C) misunderstands the notions of Black identity contained in such fiction
   (D) substitutes political for literary criteria in evaluating such fiction
   (E) ignores the interplay between Black history and Black identity displayed in such fiction

4. The author of the passage is primarily concerned with
   (A) evaluating the soundness of a work of criticism
   (B) comparing various critical approaches to a subject
   (C) discussing the limitations of a particular kind of criticism
   (D) summarizing the major points made in a work of criticism
   (E) explaining the theoretical background of a certain kind of criticism

5. The author of the passage believes that *Black Fiction* would have been improved had Rosenblatt
   (A) evaluated more carefully the ideological and historical aspects of Black fiction
   (B) attempted to be more objective in his approach to novels and stories by Black authors
   (C) explored in greater detail the recurrent thematic concerns of Black fiction throughout its history
   (D) established a basis for placing Black fiction within its own unique literary tradition
   (E) assessed the relative literary merit of the novels he analyzes thematically

6. The author of the passage refers to James Weldon Johnson's *Autobiography of an Ex-Colored Man* most probably in order to
   (A) point out affinities between Rosenblatt's method of thematic analysis and earlier criticism
   (B) clarify the point about expressionistic style made earlier in the passage
   (C) qualify the assessment of Rosenblatt's book made in the first paragraph of the passage
   (D) illustrate the affinities among Black novels disclosed by Rosenblatt's literary analysis
   (E) give a specific example of one of the accomplishments of Rosenblatt's work

The transfer of heat and water vapor from the ocean to the air above it depends on a disequilibrium at the interface of the water and the air. Within about a millimeter of the water, air temperature is close to that of the surface water, and the air is nearly saturated with water vapor. But the differences, however small, are crucial, and the disequilibrium is maintained by air near the surface mixing with air higher up, which is typically appreciably cooler and lower in water-vapor content. The air is mixed by means of turbulence that depends on the wind for its energy. As wind speed increases, so does turbulence, and thus the rate of heat and moisture transfer. Detailed understanding of this phenomenon awaits further study. (127 words)

For the following question, consider each of the choices separately and select all that apply

7. According to the passage, wind over the ocean generally does which of the following?

Ⅰ Causes relatively cool, dry air to come into proximity with the ocean surface.
Ⅱ Maintains a steady rate of heat and moisture transfer between the ocean and the air.
Ⅲ Causes frequent changes in the temperature of the water at the ocean's surface.

8. The passage suggests that if on a certain day the wind were to decrease until there was no wind at all which of the following would occur?

(A) The air closest to the ocean surface would become saturated with water vapor.
(B) The air closest to the ocean surface would be warmer than the water.
(C) The amount of moisture in the air closest to the ocean surface would decrease.
(D) The rate of heat and moisture transfer would increase.
(E) The air closest to the ocean would be at the same temperature as air higher up.

"I want to criticize the social system, and to show it at work, at its most intense." Virginia Woolf's provocative statement about her intentions in writing *Mrs. Dalloway*
Line has regularly been ignored by the critics, since it
5 highlights an aspect of her literary interests very different from the traditional picture of the "poetic" novelist concerned with examining states of reverie and vision and with following the intricate pathways of individual consciousness. But Virginia Woolf was a realistic as well
10 as a poetic novelist, a satirist and social critic as well as a visionary: literary critics' cavalier dismissal of Woolf's social vision will not withstand scrutiny.

In her novels, Woolf is deeply engaged by the questions of how individuals are shaped (or deformed) by
15 their social environments, how historical forces impinge on people's lives, how class, wealth, and gender help to determine people's fates. Most of her novels are rooted in a realistically rendered social setting and in a precise historical time. (163 words)

9. In the first paragraph of the passage, the author's attitude toward the literary critics mentioned can best be described as
   (A) disparaging
   (B) ironic
   (C) facetious
   (D) skeptical but resigned
   (E) disappointed but hopeful

10. It can be inferred from the passage that the most probable reason Woolf realistically described the social setting in the majority of her novels was that she
   (A) was aware that contemporary literary critics considered the novel to be the most realistic of literary genres
   (B) was interested in the effect of a person's social milieu on his or her character and actions
   (C) needed to be as attentive to detail as possible in her novels in order to support the arguments she advanced in them
   (D) wanted to show that a painstaking fidelity in the representation of reality did not in any way hamper the artist
   (E) wished to prevent critics from charging that her novels were written in an ambiguous and inexact style

11. In the context of the passage, "poetic" is closest in meaning to
   Ⓐ socioeconomic
   Ⓑ realistic
   Ⓒ political
   Ⓓ visionary
   Ⓔ literary

Auditor from Acme Industries: Last week at Acme Bakery, about six percent of the pastries baked during the night shift were found to be imperfect, but no imperfect pastries were found among those baked during the day shift. Pastries are inspected during the same shift in which they are baked, so clearly the night-shift quality control inspectors were more alert, despite their nighttime work hours, than the dayshift quality control inspectors.

12. The argument depends on the assumption that
(A) at least some imperfect pastries were baked during the day shift at Acme Bakery last week
(B) not all of the pastries that the night-shift quality control inspectors judged to be imperfect were in fact imperfect
(C) the night-shift quality control inspectors received more training in quality control procedures than did the day-shift quality control inspectors
(D) in a normal week, fewer than six percent of the pastries baked during the night shift at Acme Bakery are found to be imperfect
(E) there are only two shifts per day at Acme Bakery, a day shift and a night shift

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Exercise 5

Many theories have been formulated to explain the role of grazers such as zooplankton in controlling the amount of planktonic algae (phytoplankton) in lakes. The first theories of such grazer control were merely based on observations of negative correlations between algal and zooplankton numbers. A low number of algal cells in the presence of a high number of grazers suggested, but did not prove, that the grazers had removed most of the algae. The converse observation, of the absence of grazers in areas of high phytoplankton concentration, led Hardy to propose his principle of animal exclusion, which hypothesized that phytoplankton produced a repellent that excluded grazers from regions of high phytoplankton concentration. This was the first suggestion of algal defenses against grazing.

Perhaps the fact that many of these first studies considered only algae of a size that could be collected in a net (net phytoplankton), a practice that overlooked the smaller phytoplankton (nannoplankton) that we now know grazers are most likely to feed on, led to a de-emphasis of the role of grazers in subsequent research. Increasingly, as in the individual studies of Lund, Round, and Reynolds, researchers began to stress the importance of environmental factors such as temperature, light, and water movement in controlling algal numbers. These environmental factors were amenable to field monitoring and to simulation in the laboratory. Grazing was believed to have some effect on algal numbers, especially after phytoplankton growth rates declined at the end of bloom periods, but grazing was considered a minor component of models that predicted algal population dynamics.

The potential magnitude of grazing pressure on freshwater phytoplankton has only recently been determined empirically. Studies by Hargrave and Geen estimated natural community grazing rates by measuring feeding rates of individual zooplankton species in the laboratory and then computing community grazing rates for field conditions using the known population density of grazers. The high estimates of grazing pressure postulated by these researchers were not fully accepted, however, until the grazing rates of zooplankton were determined directly in the field, by means of new experimental techniques. Using a specially prepared feeding chamber, Haney was able to record zooplankton grazing rates in natural field conditions. In the periods of peak zooplankton abundance, that is, in the late spring and in the summer, Haney recorded maximum daily community grazing rates, for nutrient-poor lakes and bog lakes, respectively, of 6.6 percent and 114 percent of daily phytoplankton production. Cladocerans had higher grazing rates than copepods, usually accounting for 80 percent of the community grazing rate. These rates varied seasonally, reaching the lowest point in the winter and early spring. Haney's thorough research provides convincing field evidence that grazers can exert significant pressure on phytoplankton population. (461 words)

1. It can be inferred from the passage that the "first theories" of grazer control mentioned in the first paragraph would have been more convincing if researchers had been able to
   (A) observe high phytoplankton numbers under natural lake conditions
   (B) discover negative correlations between algae and zooplankton numbers from their field research
   (C) understand the central importance of environmental factors in controlling the growth rates of phytoplankton
   (D) make verifiable correlations of cause and effect between zooplankton and phytoplankton numbers
   (E) invent laboratory techniques that would have allowed them to bypass their field research concerning grazer control

For the following question, consider each of the choices separately and select all that apply

2. The author would be likely to agree with which of the following statements regarding the pressure of grazers on phytoplankton numbers?

Ⅰ Grazing pressure can vary according to the individual type of zooplankton.
Ⅱ Grazing pressure can be lower in nutrient-poor lakes than in bog lakes.
Ⅲ Grazing tends to exert about the same pressure as does temperature.

3. It can be inferred from the passage that one way in which many of the early researchers on grazer control could have improved their data would have been to
   (A) emphasize the effects of temperature, rather than of light, on phytoplankton
   (B) disregard nannoplankton in their analysis of phytoplankton numbers
   (C) collect phytoplankton of all sizes before analyzing the extent of phytoplankton concentration
   (D) recognize that phytoplankton other than net phytoplankton could be collected in a net
   (E) understand the crucial significance of net phytoplankton in the diet of zooplankton

4. According to the passage, Hargrave and Geen did which of the following in their experiments?
   (A) They compared the grazing rates of individual zooplankton species in the laboratory with the natural grazing rates of these species.
   (B) They hypothesized about the population density of grazers in natural habitats by using data concerning the population density of grazers in the laboratory.
   (C) They estimated the community grazing rates of zooplankton in the laboratory by using data concerning the natural community grazing rates of zooplankton.
   (D) They estimated the natural community grazing rates of zooplankton by using data concerning the known population density of phytoplankton.
   (E) They estimated the natural community grazing rates of zooplankton by using laboratory data concerning the grazing rates of individual zooplankton species.

Spiders of many species change color to match the pigmentation of the flowers they sit on. The insects preyed on by those spiders, unlike human beings, possess color discrimination so acute that they can readily see the spiders despite the seeming camouflage. Clearly, then, it must be in evading their own predators that the spiders' color changes are useful to them.

5. Which of the following, if true, most strengthens the argument?
   (A) Among the animals that feed on color-changing spiders are a few species of bat, which find their prey through sound echoes.
   (B) Certain animals that feed on color-changing spiders do so only sparingly in order to keep from ingesting harmful amounts of spider venom.
   (C) Color-changing spiders possess color discrimination that is more acute than that of spiders that lack the ability to change color.
   (D) Color-changing spiders spin webs that are readily seen by the predators of those spiders.
   (E) The color discrimination of certain birds that feed on color-changing spiders is no more acute than that of human beings.

The belief that art originates in intuitive rather than rational faculties was worked out historically and philosophically in the somewhat wearisome volumes of Benedetto Croce, who is usually considered the originator of a new aesthetic. Croce was, in fact, expressing a very old idea. Long before the Romantics stressed intuition and self-expression, the frenzy of inspiration was regarded as fundamental to art, but philosophers had always assumed it must be controlled by law and by the intellectual power of putting things into harmonious order. This general philosophic concept of art was supported by technical necessities. It was necessary to master certain laws and to use intellect in order to build Gothic cathedrals, or set up the stained glass windows of Chartres. When this bracing element of craftsmanship ceased to dominate artists' outlook, new technical elements had to be adopted to maintain the intellectual element in art. Such were linear perspective and anatomy.

(156 words)

Line
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6. The passage suggests that which of the following would most likely have occurred if linear perspective and anatomy had not come to influence artistic endeavor?
   (A) The craftsmanship that shaped Gothic architecture would have continued to dominate artists' outlooks.
   (B) Some other technical elements would have been adopted to discipline artistic inspiration.
   (C) Intellectual control over artistic inspiration would not have influenced painting as it did architecture.
   (D) The role of intuitive inspiration would not have remained fundamental to theories of artistic creation.
   (E) The assumptions of aesthetic philosophers before Croce would have been invalidated.

7. Select the sentence in the passage that indicates a traditional assumption of aesthetic philosophers.

8. The author mentions "linear perspective and anatomy" in the last sentence in order to do which of the following ?
   (A) Expand his argument to include painting as well as architecture
   (B) Indicate his disagreement with Croce's theory of the origins of art
   (C) Support his point that rational order of some kind has often seemed to discipline artistic inspiration
   (D) Explain the rational elements in Gothic painting that corresponded to craftsmanship in Gothic architecture
   (E) Show the increasing sophistication of artists after the Gothic period

Nahuatl, like Greek and German, is a language that allows the formation of extensive compounds. By the combination of radicals or semantic elements, single compound words can express complex conceptual relations, often of an abstract universal character.

The *tlamatinime* ("those who know") were able to use this rich stock of abstract terms to express the nuances of their thought. They also availed themselves of other forms of expression with metaphorical meaning, some probably original, some derived from Toltec coinages. Of these forms the most characteristic in Nahuatl is the juxtaposition of two words that, because they are synonyms, associated terms, or even contraries, complement each other to evoke one single idea. Used as metaphor, the juxtaposed terms connote specific or essential traits of the being they refer to, introducing a mode of poetry as an almost habitual form of expression.

(140 words)

9. According to the passage, some abstract universal ideas can be expressed in Nahuatl by
   (A) taking away from a word any reference to particular instances
   (B) removing a word from its associations with other words
   (C) giving a word a new and opposite meaning
   (D) putting various meaningful elements together in one word
   (E) turning each word of a phrase into a poetic metaphor

For the following question, consider each of the choices separately and select all that apply

10. It can be inferred solely from the information in the passage EXCEPT that

   Ⓐ all abstract universal ideas are ideas of complex relations
   Ⓑ some record or evidence of the thought of the *tlamatinime* exists
   Ⓒ metaphors are always used in Nahuatl to express abstract conceptual relationships

Since science tries to deal with reality, even the most precise sciences normally work with more or less imperfectly understood approximations toward which scientists must maintain an appropriate skepticism. Thus, for instance, it may come as a shock to mathematicians to learn that the Schrodinger equation for the hydrogen atom is not a literally correct description of this atom, but only an approximation to a somewhat more correct equation taking account of spin, magnetic dipole, and relativistic effects; and that this corrected equation is itself only an imperfect approximation to an infinite set of quantum field-theoretical equations. Physicists, looking at the original Schrodinger equation, learn to sense in it the presence of many invisible terms in addition to the differential terms visible, and this sense inspires an entirely appropriate disregard for the purely technical features of the equation. This very healthy skepticism is foreign to the mathematical approach. Mathematics must deal with well-defined situations. Thus, mathematicians depend on an intellectual effort outside of mathematics for the crucial specification of the approximation that mathematics is to take literally. (177 words)

11. According to the passage, scientists are skeptical toward their equations because scientists
(A) work to explain real, rather than theoretical or simplified, situations
(B) know that well-defined problems are often the most difficult to solve
(C) are unable to express their data in terms of multiple variables
(D) are unwilling to relax the axioms they have developed
(E) are unable to accept mathematical explanations of natural phenomena

12. The author implies that scientists develop a healthy skepticism because they are aware that
(A) mathematicians are better able to solve problems than are scientists
(B) changes in axiomatic propositions will inevitably undermine scientific arguments
(C) well-defined situations are necessary for the design of reliable experiments
(D) mathematical solutions can rarely be applied to real problems
(E) some factors in most situations must remain unknown

Exercise 6

Some modern anthropologists hold that biological evolution has shaped not only human morphology but also human behavior. The role those anthropologists ascribe to evolution is not of dictating the details of human behavior but one of imposing constraints—ways of feeling, thinking, and acting that "come naturally" in archetypal situations in any culture. Our "frailties" –emotions and motives such as rage, fear, greed, gluttony, joy, lust, love—may be a very mixed assortment, but they share at least one immediate quality: we are, as we say, "in the grip" of them. And thus they give us our sense of constraints.

Unhappily, some of those frailties—our need for ever-increasing security among them—are presently maladaptive. Yet beneath the overlay of cultural detail, they, too, are said to be biological in direction, and therefore as natural to us as are our appendixes. We would need to comprehend thoroughly their adaptive origins in order to understand how badly they guide us now. And we might then begin to resist their pressure. (174 words)

1. Which of the following most probably provides an appropriate analogy from human morphology for the "details" versus "constraints" distinction made in the passage in relation to human behavior?
   (A) The ability of most people to see all the colors of the visible spectrum as against most people's inability to name any but the primary colors
   (B) The ability of even the least fortunate people to show compassion as against people's inability to mask their feelings completely
   (C) The ability of some people to dive to great depths as against most people's inability to swim long distances
   (D) The psychological profile of those people who are able to delay gratification as against people's inability to control their lives completely
   (E) The greater lung capacity of mountain peoples that helps them live in oxygen-poor air as against people's inability to fly without special apparatus

2. It can be inferred that in his discussion of maladaptive frailties the author assumes that
   (A) evolution does not favor the emergence of adaptive characteristics over the emergence of maladaptive ones
   (B) any structure or behavior not positively adaptive is regarded as transitory in evolutionary theory
   (C) maladaptive characteristics, once fixed, make the emergence of other maladaptive characteristics more likely
   (D) the designation of a characteristic as being maladaptive must always remain highly tentative
   (E) changes in the total human environment can outpace evolutionary change

The molecules of carbon dioxide in the Earth's atmosphere affect the heat balance of the Earth by acting as a one-way screen. Although these molecules allow radiation at visible wavelengths, where most of the energy of sunlight is concentrated, to pass through, they absorb some of the longer-wavelength, infrared emissions radiated from the Earth's surface, radiation that would otherwise be transmitted back into space. For the Earth to maintain a constant aver age temperature, such emissions from the planet must balance incoming solar radiation. If there were no car-bon dioxide in the atmosphere, heat would escape from the Earth much more easily. The surface temperature would be so much lower that the oceans might be a solid mass of ice. (120 words)

3. According to the passage, the greatest part of the solar energy that reaches the Earth is
(A) concentrated in the infrared spectrum
(B) concentrated at visible wavelengths
(C) absorbed by carbon dioxide molecules
(D) absorbed by atmospheric water vapor
(E) reflected back to space by snow and ice

For the following question, consider each of the choices separately and select all that apply

4. According to the passage, atmospheric carbon dioxide performs which of the following functions
Ⅰ absorbing radiation at visible wavelengths
Ⅱ absorbing outgoing radiation from the Earth
Ⅲ helping to retain heat near the Earth's surface

Initially the Vinaver theory that Malory's eight romances, once thought to be fundamentally unified. were in fact eight independent works produced both a sense of relief and an unpleasant shock. Vinaver's theory comfortably explained away the apparent contradictions of chronology and made each romance independently satisfying. It was, however, disagreeable to find that what had been thought of as one book was now eight books. Part of this response was the natural reaction to the disturbance of set ideas. Nevertheless, even now, after lengthy consideration of the theory's refined but legitimate observations, one cannot avoid the conclusion that the eight romances are only one work. It is not quite a matter of disagreeing with the theory of independence, but of rejecting its implications: that the romances may be taken in any or no particular order, that they have no cumulative effect, and that they are as separate as the works of a modern novelist.

(154 words)

For the following question, consider each of the choices separately and select all that apply

5. It can be inferred from the passage that the author believes which of the following about Malory's works?

Ⓐ There are meaningful links between and among the romances.

Ⓑ The subtleties of the romances are obscured when they are taken as one work.

Ⓒ Any contradictions in chronology among the romances are less important than their over-all unity.

6. The author of the passage concedes which of the following about the Vinaver theory?

(A) It gives a clearer understanding of the unity of Malory's romances.

(B) It demonstrates the irrationality of considering Malory's romances to be unified.

(C) It establishes acceptable links between Malory's romances and modern novels.

(D) It unifies earlier and later theories concerning the chronology of Malory's romances.

(E) It makes valid and subtle comments about Malory's romances.

7. It can be inferred from the passage that, in evaluating the Vinaver theory, some critics were

(A) frequently misled by the inconsistencies in Malory's work

(B) initially biased by previous interpretations of Malory's work

(C) conceptually displeased by the general interpretation that Vinaver rejected

(D) generally in agreement with Vinaver's comparisons between Malory and modern novelists

(E) originally skeptical about Vinaver's early conclusions with respect to modern novels

8. Which of the following most logically completes the argument below?

Each year every employee of SAI Corporation must enroll in one of the two health insurance plans offered by SAI. One plan requires a sizable monetary contribution from employees; the other plan is paid for entirely by SAI. Many SAI employees enroll in the plan requiring employee contributions. This fact does not show that they feel that this plan's benefits are superior to those provided by the plan requiring no employee contribution since----.

(A) the plan that requires an employee contribution costs and enrolled employee significantly less per year than do typical health insurance plans offered by corporations other than SAI
(B) only SAI employees who have worked for SAI for at least fifteen years are eligible to enroll in the plan paid for entirely by SAI
(C) the two health insurance plans currently offered by SAI are substantially the same plans SAI has offered for the past ten years
(D) most of the SAI employees enrolled in the plan paid for entirely by SAI are under 50 years old
(E) both plans offered by SAI provide benefits not only for employees of SAI but also for children and spouses of enrolled employees

The historian Frederick J. Turner wrote in the 1890's that the agrarian discontent that had been developing steadily in the United States since about 1870 had been precipitated by the closing of the internal frontier--that is, the depletion of available new land needed for further expansion of the American farming system. Actually, however, new lands were taken up for farming in the United States throughout and beyond the nineteenth century. In the 1890's, when agrarian discontent had become most acute, 1,100,000 new farms were settled, which was 500,000 more than had been settled during the previous decade. After 1890, under the terms of the Homestead Act and its successors, more new land was taken up for farming than had been taken up for this purpose in the United States up until that time. It is true that a high proportion of the newly farmed land was suitable only for grazing and dry farming, but agricultural practices had become sufficiently advanced to make it possible to increase the profitability of farming by utilizing even these relatively barren lands.

The emphasis of the presumed disappearance of the American frontier obscured the great importance of changes in the conditions and consequences of international trade that occurred during the second half of the nineteenth century. Huge tracts of land were being settled and farmed in Argentina, Australia, Canada, and in the American West, and these areas were joined with one another and with the countries of Europe into an interdependent market system. Consequently, agrarian depressions no longer were local or national in scope, and they struck several nations whose internal frontiers had not vanished or were not about to vanish. Between the early 1870's and the 1890's, the mounting agrarian discontent in America paralleled the almost uninterrupted decline in the prices of American agricultural products on foreign markets. Those staple-growing farmers in the United States who exhibited the greatest discontent were those who had become most dependent on foreign markets for the sale of their products. Insofar as Americans had been deterred from taking up new land for farming, it was because market conditions had made this period a perilous time in which to do so.

(369 words)

9. The author is primarily concerned with
   (A) showing that a certain interpretation is better supported by the evidence than is an alternative explanation
   (B) developing an alternative interpretation by using sources of evidence that formerly had been unavailable
   (C) questioning the accuracy of the evidence that most scholars have used to counter the author's own interpretation
   (D) reviewing the evidence that formerly had been thought to obscure a valid interpretation
   (E) presenting evidence in support of a controversial version of an earlier interpretation.

10. According to the author, changes in the conditions of international trade resulted in an
   (A) underestimation of the amount of new land that was being famed in the United States
   (B) underutilization of relatively small but rich plots of land
   (C) overexpansion of the world transportation network for shipping agricultural products
   (D) extension of agrarian depressions beyond national boundaries
   (E) emphasis on the importance of market forces in determining the prices of agricultural products

11. The author implies that, after certain territories and countries had been joined into an interdependent market system in the nineteenth century, agrarian depressions within that system
(A) spread to several nations, excluding those in which the internal frontier remained open
(B) manifested themselves in several nations, including those in which new land remained available for farming
(C) slowed down the pace of new technological developments in international communications and transportation
(D) affected the local and national prices of the nonagricultural products of several nations
(E) encouraged several nations to sell more of their agricultural products on foreign markets

12. The author's argument implies that, compared to the yearly price changes that actually occurred on foreign agricultural markets during the 1880's, American farmers would have most preferred yearly price changes that were
(A) much smaller and in the same direction
(B) much smaller but in the opposite direction
(C) slightly smaller and in the same direction
(D) similar in size but in the opposite direction
(E) slightly greater and in the same direction

When the same parameters and quantitative theory are used to analyze both termite colonies and troops of rhesus macaques, we will have a unified science of sociobiology. I have been increasingly impressed with the functional similarities between insect and vertebrate societies and less so with the structural differences that seem, at first glance, to constitute such an immense gulf between them. Consider termites and macaques. Both form cooperative groups that occupy territories. In both kinds of society there is a well-marked division of labor. Members of both groups communicate to each other hunger, alarm, hostility, caste status or rank, and reproductive status. From the specialist's point of view, this comparison may at first seem facile—or worse. But it is out of such deliberate oversimplification that the beginnings of a general theory are made. (134 words)

13. Select the sentence in the passage in which the author suggests that there are significant structural differences between insect and vertebrate societies.

Exercise 7

Hydrogeology is a science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere. The term “geohydrology” is sometimes erroneously used as a synonym for “hydrogeology.” Geohydrology is concerned with underground water. There are many formations that contain water but are not part of the hydrologic cycle because of geologic changes that have isolated them underground. These systems are properly termed geohydrologic but not hydrogeologic. Only when a system possesses natural or artificial boundaries that associate the water within it with the hydrologic cycle may the entire system properly be termed hydrogeologic.

(107 words)

1. It can be inferred that which of the following is most likely to be the subject of study by a geohydrologist?
   (A) Soft, porous rock being worn away by a waterfall
   (B) Water depositing minerals on the banks of a gorge through which the water runs
   (C) The trapping of water in a sealed underground rock cavern through the action of an earthquake
   (D) Water becoming unfit to drink through the release of pollutants into it from a manufacturing plant
   (E) The changing course of a river channel as the action of the water wears away the rocks past which the river flows

2. The author refers to “many formations” primarily in order to
   (A) clarify a distinction
   (B) introduce a subject
   (C) draw an analogy
   (D) emphasize a similarity
   (E) resolve a conflict

In the 1750's, when salons were firmly established in France, some English women, who called themselves "Bluestocking," followed the example of the *salonnieres* (French salon hostesses) and formed their own salons. Most Bluestockings did not wish to mirror the *salonnieres*; they simply desired to adapt a proven formula to their own purpose—the elevation of women's status through moral and intellectual training. Differences in social orientation and background can account perhaps for differences in the nature of French and English salons. The French salon incorporated aristocratic attitudes that exalted courtly pleasure and emphasized artistic accomplishments. The English Bluestockings, originating from a more modest background, emphasized learning and work over pleasure. Accustomed to the regimented life of court circles, *salonnieres* tended toward formality in their salons. The English women, though somewhat puritanical, were more casual in their approach.

(139 words)

3. According to the passage, a significant distinction between the *salonnieres* and Bluestockings was in the way each group regarded which of the following?
   (A) The value of acquiring knowledge
   (B) The role of pleasure in the activities of the literary salon
   (C) The desirability of a complete break with societal traditions
   (D) The inclusion of women of different backgrounds in the salons
   (E) The attainment of full social and political equality with men

4. The author refers to differences in social background between *salonnieres* and Bluestockings in order to do which of the following?
   (A) Criticize the view that their choices of activities were significantly influenced by male salon members
   (B) Discuss the reasons why literary salons in France were established before those in England
   (C) Question the importance of the Bluestockings in shaping public attitudes toward educated women
   (D) Refute the argument that the French salons had little influence over the direction the English salons took
   (E) Explain the differences in atmosphere and style in their salons

For the following question, consider each of the choices separately and select all that apply

5. Which of the following statements is most compatible with the principles of the *salonnieres* as described in the passage?

Ⅰ Devotion to pleasure and art is justified in itself.
Ⅱ Men should be excluded from groups of women's rights supporters.
Ⅲ Women should aspire to be not only educated but independent as well.

All of Francoise Duparc's surviving paintings blend portraiture and genre. Her subjects appear to be acquaintances whom she has asked to pose; she has captured both their self-consciousness and the spontaneity of their everyday activities, the depiction of which characterizes genre painting. But genre painting, especially when it portrayed members of the humblest classes, was never popular in eighteenth-century France. The Le Nain brothers and Georges de La Tour, who also chose such themes, were largely ignored. Their present high standing is due to a different, more democratic political climate and to different aesthetic values: we no longer require artists to provide ideal images of humanity for our moral edification but rather regard such idealization as a falsification of the truth. Duparc gives no improving message and discreetly refrains from judging her subjects. In brief, her works neither elevate nor instruct. This restraint largely explains her lack of popular success during her lifetime, even if her talent did not go completely unrecognized by her eighteenth-century French contemporaries.

6. According to the passage, modern viewers are not likely to value which of the following qualities in a painting?
   (A) The technical elements of the painting
   (B) The spontaneity of the painting
   (C) The moral lesson imparted by the painting
   (D) The degree to which the painting realistically depicts its subject
   (E) The degree to which the artist's personality is revealed in the painting

7. If the history of Duparc's artistic reputation were to follow that of the Le Nain brothers and Georges de La Tour, present-day assessments of her work would be likely to contain which of the following?
   (A) An evaluation that accords high status to her work
   (B) Acknowledgement of her technical expertise but dismissal of her subject matter as trivial
   (C) Agreement with assessments made in her own time but acknowledgements of the exceptional quality of a few of her paintings
   (D) Placement of her among the foremost artists of her century
   (E) A reclassification of her work as portraiture rather than genre painting

8. Select the sentence in the passage in which the author indicates that aesthetic judgments can be influenced by the political beliefs of those making the judgment.

Flatfish, such as the flounder, are among the few vertebrates that lack approximate bilateral symmetry (symmetry in which structures to the left and right of the body's midline are mirror images). Most striking among the many asymmetries evident in an adult flatfish is eye placement: before maturity one eye migrates, so that in an adult flatfish both eyes are on the same side of the head. While in most species with asymmetries virtually all adults share the same asymmetry, members of the starry flounder species can be either left-eyed (both eyes on the left side of head) or right-eyed. In the waters between the United States and Japan, the starry flounder populations vary from about 50 percent left-eyed off the United States West Coast, through about 70 percent left-eyed halfway between the United States and Japan, to nearly 100 percent left-eyed off the Japanese coast.

Biologists call this kind of gradual variation over a certain geographic rang a "cline" and interpret clines as strong indications that the variation is adaptive, a response to environmental differences. For the starry flounder this interpretation implies that a geometric difference (between fish that are mirror images of one another) is adaptive, that left-eyedness in the Japanese starry flounder has been selected for, which provokes a perplexing questions: what is the selective advantage in having both eyes on one side rather than on the other?

The ease with which a fish can reverse the effect of the sidedness of its eye asymmetry simply by turning around has caused biologists to study internal anatomy, especially the optic nerves, for the answer. In all flatfish the optic nerves cross, so that the right optic nerve is joined to the brain's left side and vice versa. This crossing introduces an asymmetry, as one optic nerve must cross above or below the other. G. H. Parker reasoned that if, for example, a flatfish's left eye migrated when the right optic nerve was on top, there would be a twisting of nerves, which might be mechanically disadvantageous. For starry flounders, then, the left-eyed variety would be selected against, since in a starry flounder the left optic nerve is uppermost.

The problem with the above explanation is that the Japanese starry flounder population is almost exclusively left-eyed, and natural selection never promotes a purely less advantageous variation. As other explanations proved equally untenable, biologists concluded that there is no important adaptive difference between left-eyedness and right-eyedness, and that the two characteristics are genetically associated with some other adaptively significant characteristic. This situation is one commonly encountered by evolutionary biologists, who must often decide whether a characteristic is adaptive or selectively neutral. As for the left-eyed and right-eyed flatfish, their difference, however striking, appears to be an evolutionary red herring.

(456 words)

9. According to the passage, starry flounder differ from most other species of flatfish in that starry flounder
(A) are not basically bilaterally symmetric
(B) do not become asymmetric until adulthood
(C) do not all share the same asymmetry
(D) have both eyes on the same side of the head
(E) tend to cluster in only certain geographic regions

For the following question, consider each of the choices separately and select all that apply

10. The author would be most likely to agree with which of the following statements about left-eyedness and right-eyedness in the starry flounder?

Ⓐ They are adaptive variations by the starry flounder to environmental differences.

Ⓑ They do not seem to give obvious selective advantages to the starry flounder.

Ⓒ They occur in different proportions in different locations.

11. According to the passage, a possible disadvantage associated with eye migration in flatfish is that the optic nerves can
(A) adhere to one another
(B) detach from the eyes
(C) cross
(D) stretch
(E) twist

12. Which of the following best describes the organization of the passage as a whole?
(A) A phenomenon is described and an interpretation presented and rejected.
(B) A generalization is made and supporting evidence is supplied and weighed.
(C) A contradiction is noted and a resolution is suggested and then modified.
(D) A series of observations is presented and explained in terms of the dominant theory.
(E) A hypothesis is introduced and corroborated in the light of new evidence.

The use of heat pumps has been held back largely by skepticism about advertisers' claims that heat pumps can provide as many as two units of thermal energy for each unit of electrical energy used, thus apparently contradicting the principle of energy conservation.

13. If the author's assessment of the use of heat pumps is correct, which of the following best expresses the lesson that advertisers should learn from this case?
    (A) Do not make exaggerated claims about the products you are trying to promote.
    (B) Focus your advertising campaign on vague analogies and veiled implications instead of on facts.
    (C) Do not use facts in your advertising that will strain the prospective client's ability to believe.
    (D) Do not assume in your advertising that the prospective clients know even the most elementary scientific principles.
    (E) Concentrate your advertising firmly on financially relevant issues such as price discounts and efficiency of operation.

Exercise 8

Heat pumps circulate a fluid refrigerant that cycles alternatively from its liquid phase to its vapor phase in a closed loop. The refrigerant, starting as a low-
Line temperature, low-pressure vapor, enters a compressor
5 driven by an electric motor. The refrigerant leaves the compressor as a hot, dense vapor and flows through a heat exchanger called the condenser, which transfers heat from the refrigerant to a body of air. Now the refrigerant, as a high-pressure, cooled liquid, confronts
10 a flow restriction which causes the pressure to drop. As the pressure falls, the refrigerant expands and partially vaporizes, becoming chilled. It then passes through a second heat exchanger, the evaporator, which transfers heat from the air to the refrigerant, reducing the
15 temperature of this second body of air.

(126 words)

1. According to the passage, the role of the flow restriction in a heat pump is to
   (A) measure accurately the flow rate of the refrigerant mass at that point
   (B) compress and heat the refrigerant vapor
   (C) bring about the evaporation and cooling of refrigerant
   (D) exchange heat between the refrigerant and the air at that point
   (E) reverse the direction of refrigerant flow when needed

Traditionally, the study of history has had fixed boundaries and focal points—periods, countries, dramatic events, and great leaders. It also has had clear and firm notions of scholarly procedure: how one inquires into a historical problem, how one presents and documents one's findings, what constitutes admissible and adequate proof. The recent popular psychohistory, committed to Freudian psychoanalysis, takes a radically different approach. This commitment precludes a commitment to history as historians have always understood it. Psychohistory derives its "facts" not from history, the detailed records of events and their consequences, but from psychoanalysis of the individuals who made history, and deduces its theories not from this or that instance in their lives, but from a view of human nature that transcends history. It denies the basic criterion of historical evidence: that evidence be publicly accessible to, and therefore assessable by, all historians. Psychohistorians, convinced of the absolute rightness of their own theories, are also convinced that theirs is the "deepest" explanation of any event that other explanations fall short of the truth.

Line
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2. Which of the following best states the main point of the passage?
   (A) The approach of psychohistorians to historical study is currently in vogue even though it lacks the rigor and verifiability of traditional historical method.
   (B) Traditional historians can benefit from studying the techniques and findings of psychohistorians.
   (C) Areas of sociological study such as childhood and work are of little interest to traditional historians.
   (D) The psychological assessment of an individual's behavior and attitudes is more informative than the details of his or her daily life.
   (E) History is composed of unique and nonrepeating events that must be individually analyzed on the basis of publicly verifiable evidence.

3. The author of the passage puts the word "deepest" in quotation marks most probably in order to
   (A) question the usefulness of psychohistorians' insights into traditional historical scholarship
   (B) draw attention to a contradiction in the psychohistorians' method
   (C) emphasize the major difference between the traditional historians' method and that of psychohistorians
   (D) disassociate her opinion of the psychohistorians' claims from her opinion of their method
   (E) signal her reservations about the accuracy of psychohistorians' claims for their work

Eight percent of the Earth's crust is aluminum, and there are hundreds of aluminum-bearing minerals and vast quantities of the rocks that contain them. The best aluminum ore is bauxite, defined as aggregates of aluminous minerals, more or less impure, in which aluminum is present as hydrated oxides. Bauxite is the richest of all those aluminous rocks that occur in large quantities, and it yields alumina, the intermediate product required for the production of aluminum. Alumina also occurs naturally as the mineral corundum, but corundum is not found in large deposits of high purity, and therefore it is an impractical source for making aluminum. Most of the many abundant nonbauxite aluminous minerals are silicates, and, like all silicate minerals, they are refractory, resistant to analysis, and extremely difficult to process. The aluminum silicates are therefore generally unsuitable alternatives to bauxite because considerably more energy is required to extract alumina from them. (153 words)

4. The author implies that a mineral must either be or readily supply which of the following in order to be classified as an aluminum ore?
   (A) An aggregate
   (B) Bauxite
   (C) Alumina
   (D) Corundum
   (E) An aluminum silicate

For the following question, consider each of the choices separately and select all that apply

5. The passage supplies information for answering all of the following questions regarding aluminous minerals
   Ⅰ Are aluminum-bearing nonbauxite minerals plentiful?
   Ⅱ Do the aluminous minerals found in bauxite contain hydrated oxides?
   Ⅲ Are aluminous hydrated oxides found in rocks?

6. The author implies that corundum would be used to produce aluminum if
   (A) corundum could be found that is not contaminated by silicates
   (B) the production of alumina could be eliminated as an intermediate step in manufacturing aluminum
   (C) many large deposits of very high quality corundum were to be discovered
   (D) new technologies were to make it possible to convert corundum to a silicate
   (E) manufacturers were to realize that the world's supply of bauxite is not unlimited

Tillie Olsen's fiction and essays have been widely and rightly acknowledged, particularly by contemporary feminists, as major contributions to American literature. Yet few of Olsen's readers realize the extent to which her vision and choice of subject are rooted in an earlier literary heritage—the tradition of radical political thought, mostly socialist and anarchist, of the 1910's and 1920's, and the Old Left tradition of the 1930's. I do not mean that one can adequately explain the eloquence of her work in terms of its political origins, or that left-wing politics were the single most important influence on it. My point is that its central consciousness—its profound understanding of class and gender as shaping influences on people's lives—owes much to that earlier literary heritage.

(126 words)

Line
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For the following question, consider each of the choices separately and select all that apply

7. According to the author, which of the following is NOT true of the heritage mentioned in the passage?

Ⓐ It emphasizes gender as the determinate influence on people's lives.

Ⓑ It includes political traditions that span three decades of the twentieth century.

Ⓒ It has been the most important influence on Olsen's work.

8. Select the sentence in which the author denies possible interpretations of an earlier assertion.

Our visual perception depends on the reception of energy reflecting or radiating from that which we wish to perceive. If our eyes could receive and measure infinitely delicate sense-data, we could perceive the world with infinite precision. The natural limits of our eyes have, of course, been extended by mechanical instruments; telescopes and microscopes, for example, expand our capabilities greatly. There is, however, an ultimate limit beyond which no instrument can take us; this limit is imposed by our inability to receive sense-data smaller than those conveyed by an individual quantum of energy.

(97 words)

9. Which of the following describes a situation most analogous to the situation discussed in the last sentence?

(A) A mathematician can only solve problems the solution of which can be deduced from known axioms.

(B) An animal can respond to no command that is more complicated syntactically than any it has previously received.

(C) A viewer who has not learned, at least intuitively, the conventions of painting, cannot understand perspective in a drawing.

(D) A sensitized film will record no detail on a scale that is smaller than the grain of the film.

(E) A shadow cast on a screen by an opaque object will have a sharp edge only if the light source is small or very distant.

Of Homer's two epic poems, the *Odyssey* has always been more popular than the *Iliad*, perhaps because it includes more features of mythology that are accessible to readers. Its subject (to use Maynard Mack's categories) is "life-as-spectacle," for readers, diverted by its various incidents, observe its hero Odysseus primarily from without; the tragic *Iliad*, however, presents "life-as- experience": readers are asked to identify with the mind of Achilles, whose motivations render him a not particularly likable hero. In addition, the *Iliad*, more than the *Odyssey*, suggests the complexity of the gods' involvement in human actions, and to the extent that modern readers find this complexity a needless complication, the *Iliad* is less satisfying than the *Odyssey*, with its simpler 'scheme' of divine justice. Finally, since the *Iliad* presents a historically verifiable action, Troy's siege, the poem raises historical questions that are absent from the *Odyssey*'s blithely imaginative world.

(148 words)

10. The author uses Mack's "categories" (lines 4-5) most probably in order to
(A) argue that the *Iliad* should replace the *Odyssey* as the more popular poem
(B) indicate Mack's importance as a commentator on the *Iliad* and the *Odyssey*
(C) suggest one way in which the *Iliad* and the *Odyssey* can be distinguished
(D) point out some of the difficulties faced by readers of the *Iliad* and the *Odyssey*
(E) demonstrate that the *Iliad* and the *Odyssey* can best be distinguished by comparing their respective heroes

11. The passage is primarily concerned with
(A) distinguishing arguments
(B) applying classifications
(C) initiating a debate
(D) resolving a dispute
(E) developing a contrast

12. It can be inferred from the passage that a reader of the *Iliad* is likely to have trouble identifying with the poem's hero for which of the following reasons?
(A) The hero is eventually revealed to be unheroic.
(B) The hero can be observed by the reader only from without.
(C) The hero's psychology is not historically verifiable.
(D) The hero's emotions often do not seem appealing to the reader.
(E) The hero's emotions are not sufficiently various to engage the reader's attention.

Exercise 9

Jean Wagner's most enduring contribution to the study of Afro-American poetry is his insistence that it be analyzed in a religious, as well as secular, frame of reference. The appropriateness of such an approach may seem self-evident for a tradition commencing with spirituals and owing its early forms, rhythms, vocabulary, and evangelical fervor to Wesleyan hymnals. But before Wagner a secular outlook that analyzed Black poetry solely within the context of political and social protest was dominant in the field.

It is Wagner who first demonstrated the essential fusion of racial and religious feeling in Afro-American poetry. The two, he argued, form a symbiotic union in which religious feelings are often applied to racial issues and racial problems are often projected onto a metaphysical plane. Wagner found this most eloquently illustrated in the Black spiritual, where the desire for freedom in this world and the hope for salvation in the next are inextricably intertwined.

(159 words)

1. The primary purpose of the passage is to
   (A) contrast the theories of Jean Wagner with those of other contemporary critics
   (B) document the influence of Jean Wagner on the development of Afro-American poetry
   (C) explain the relevance of Jean Wagner's work to the study of Afro-American religion
   (D) indicate the importance of Jean Wagner's analysis of Afro-American poetry
   (E) present the contributions of Jean Wagner to the study of Black spirituals

2. All of the following aspects of Afro-American poetry are referred to in the passage as having been influenced by Wesleyan hymnals EXCEPT
   (A) subject matter
   (B) word choice
   (C) rhythm
   (D) structure
   (E) tone

3. It can be inferred from the passage that, before Wagner, most students of Afro-American poetry did which of the following?
   (A) Contributed appreciably to the transfer of political protest from Afro-American poetry to direct political action.
   (B) Ignored at least some of the historical roots of Afro-American poetry.
   (C) Analyzed fully the aspects of social protest to be found in such traditional forms of Afro-American poetry as the Black spiritual.
   (D) Regarded as unimportant the development of fervent emotionalism in a portion of Afro-American poetry.
   (E) Concentrated on the complex relations between the technical elements in Afro-American poetry and its political content.

In the early 1950's, historians who studied preindustrial Europe (which we may define here as Europe in the period from roughly 1300 to 1800) began, for the first time in large numbers, to investigate more of the preindustrial European population than the 2 or 3 percent who comprised the political and social elite: the kings, generals, judges, nobles, bishops, and local magnates who had hitherto usually filled history books. One difficulty, however, was that few of the remaining 97 percent recorded their thoughts or had them chronicled by contemporaries. Faced with this situation, many historians based their investigations on the only records that seemed to exist: birth, marriage, and death records. As a result, much of the early work on the nonelite was aridly statistical in nature; reducing the vast majority of the population to a set of numbers was hardly more enlightening than ignoring them altogether. Historians still did not know what these people thought or felt.

One way out of this dilemma was to turn to the records of legal courts, for here the voices of the nonelite can most often be heard, as witnesses, plaintiffs, and defendants. These documents have acted as "a point of entry into the mental world of the poor." Historians such as Le Roy Ladurie have used the documents to extract case histories, which have illuminated the attitudes of different social groups (these attitudes include, but are not confined to, attitudes toward crime and the law) and have revealed how the authorities administered justice. It has been societies that have had a developed police system and practiced Roman law, with its written depositions, whose court records have yielded the most data to historians. In Anglo-Saxon countries hardly any of these benefits obtain, but it has still been possible to glean information from the study of legal documents.

The extraction of case histories is not, however, the only use to which court records may be put. Historians who study preindustrial Europe have used the records to establish a series of categories of crime and to quantify indictments that were issued over a given number of years. This use of the records does yield some information about the nonelite, but this information gives us little insight into the mental lives of the nonelite. We also know that the number of indictments in preindustrial Europe bears little relation to the number of actual criminal acts, and we strongly suspect that the relationship has varied widely over time. In addition, aggregate population estimates are very shaky, which makes it difficult for historians to compare rates of crime per thousand in one decade of the preindustrial period with rates in another decade. Given these inadequacies, it is clear why the case history use of court records is to be preferred.

(473 words)

4. The author suggests that, before the early 1950's, most historians who studied preindustrial Europe did which of the following?

(A) Failed to make distinctions among members of the preindustrial European political and social elite.

(B) Used investigatory methods that were almost exclusively statistical in nature.

(C) Inaccurately estimated the influence of the preindustrial European political and social elite.

(D) Confined their work to a narrow range of the preindustrial European population.

(E) Tended to rely heavily on birth, marriage, and death records.

5. According to the passage, the case histories extracted by historians have

(A) scarcely illuminated the attitudes of the political and social elite

(B) indicated the manner in which those in power apportioned justice

(C) focused almost entirely on the thoughts and feelings of different social groups toward crime and the law

(D) been considered the first kind of historical writing that utilized the records of legal courts

(E) been based for the most part on the trial testimony of police and other legal authorities

6. It can be inferred from the passage that much of the early work by historians on the European nonelite of the preindustrial period might have been more illuminating if these historians had

(A) used different methods of statistical analysis to investigate the nonelite

(B) been more successful in identifying the attitudes of civil authorities, especially those who administered justice, toward the nonelite

(C) been able to draw on more accounts, written by contemporaries of the nonelite, that described what this nonelite thought

(D) relied more heavily on the personal records left by members of the European political and social elite who lived during the period in question

(E) been more willing to base their research on the birth, marriage, and death records of the nonelite

7. It can be inferred from the passage that a historian who wished to compare crime rates per thousand in a European city in one decade of the fifteenth century with crime rates in another decade of that century would probably be most aided by better information about which of the following?

(A) The causes of unrest in the city during the two decades

(B) The aggregate number of indictments in the city nearest to the city under investigation during the two decades

(C) The number of people who lived in the city during each of the decades under investigation

(D) The mental attitudes of criminals in the city, including their feelings about authority, during each of the decades under investigation

(E) The possibilities for a member of the city's nonelite to become a member of the political and social elite during the two decades

Mycorrhizal fungi infect more plants than do any other fungi and are necessary for many plants to thrive, but they have escaped widespread investigation until recently for two reasons. First, the symbiotic association is so well-balanced that the roots of host plants show no damage even when densely infected. Second, the fungi cannot as yet be cultivated in the absence of a living root. Despite these difficulties, there has been important new work that suggests that this symbiotic association can be harnessed to achieve more economical use of costly superphosphate fertilizer and to permit better exploitation of cheaper, less soluble rock phosphate. Mycorrhizal benefits are not limited to improved phosphate uptake in host plants. In legumes, Mycorrhizal inoculation has increased nitrogen fixation beyond levels achieved by adding phosphate fertilizer alone. Certain symbiotic associations also increase the host plant's resistance to harmful root fungi.

Line
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15

8. Which of the following most accurately describes the passage?
   (A) A description of a replicable experiment
   (B) A summary report of new findings
   (C) A recommendation for abandoning a difficult area of research
   (D) A refutation of an earlier hypothesis
   (E) A confirmation of earlier research

For the following question, consider each of the choices separately and select all that apply

9. It can be inferred from the passage that which of the following has NOT been a factor influencing the extent to which research on mycorrhizal fungi has progressed?
   Ⓐ Lack of a method for identifying mycorrhizal fungi
   Ⓑ Difficulties surrounding laboratory production of specimens for study
   Ⓒ Difficulties ensuing from the high cost and scarcity of superphosphate fertilizers

It is one of nature's great ironies that the availability of nitrogen in the soil frequently sets an upper limit on plant growth even though the plants' leaves are bathed in a sea of nitrogen gas. The leguminous plants—among them crop plants such as soybeans, peas, alfalfa, and clover—have solved the nitrogen supply problem by entering into a symbiotic relationship with the bacterial genus *Rhizobium*.

Line
5

10. Which of the following situations is most closely analogous to the situation described by the author as one of nature's great ironies?

(A) That of a farmer whose crops have failed because the normal midseason rains did not materialize and no preparations for irrigation had been made

(B) That of a long-distance runner who loses a marathon race because of a wrong turn that cost him twenty seconds

(C) That of shipwrecked sailors at sea in a lifeboat, with one flask of drinking water to share among them

(D) That of a motorist who runs out of gas a mere five miles from the nearest gas station

(E) That of travelers who want to reach their destination as fast and as cheaply as possible, but find that cost increases as travel speed increases

Throughout human history there have been many stringent taboos concerning watching other people eat or eating in the presence of others. There have been attempts to explain these taboos in terms of inappropriate social relationships either between those who are involved and those who are not simultaneously involved in the satisfaction of a bodily need, or between those already satiated and those who appear to be shamelessly gorging. Undoubtedly such elements exist in the taboos, but there is an additional element with a much more fundamental importance. In prehistoric times, when food was so precious and the on-lookers so hungry, not to offer half of the little food one had was unthinkable, since every glance was a plea for life.

(124 words)

11. If the argument in the passage is valid, taboos against eating in the presence of others who are not also eating would be LEAST likely in a society that
(A) had always had a plentiful supply of food
(B) emphasized the need to share worldly goods
(C) had a nomadic rather than an agricultural way of life
(D) emphasized the value of privacy
(E) discouraged overindulgence

12. The author's hypothesis concerning the origin of taboos against watching other people eat emphasizes the
(A) general palatability of food
(B) religious significance of food
(C) limited availability of food
(D) various sources of food
(E) nutritional value of food

13. Select the sentence in the passage in which the author suggests that past attempts to explain some taboos concerning eating are incomplete.

Exercise 10

Currently, the paramount problem in the field of biomaterials, the science of replacing diseased tissue with human-made implants, is control over the interface, or
Line surface, between implanted biomaterials and living
5 tissues. The physical properties of most tissues can be matched by careful selection of raw materials: metals, ceramics, or several varieties of polymer materials. Even the requirement that biomaterials processed from these materials be nontoxic to host tissue can be met by
10 techniques derived from studying the reactions of tissue cultures to biomaterials or from short-term implants. But achieving necessary matches in physical properties across interfaces between living and non-living matter requires knowledge of which molecules control the bonding of
15 cells to each other—an area that we have not yet explored thoroughly. Although recent research has allowed us to stabilize the tissue-biomaterial interface by controlling either the chemical reactions or the microstructure of the biomaterials, our fundamental understanding of how
20 implant devices adhere to tissues remains woefully incomplete. (159 words)

1. According to the passage, the major problem currently facing scientists in the field of biomaterials is
   (A) assessing and regulating the bonding between host tissue and implants
   (B) controlling the transfer of potentially toxic materials across the interface of tissue and implant
   (C) discovering new materials from which to construct implant devices
   (D) deciding in what situations implants are needed
   (E) determining the importance of short-term implants to long-term stability of tissue implant interfaces

2. The passage suggests which of the following about the recent research mentioned in the last sentence ?
   (A) It has solved one set of problems but has created another.
   (B) It has concentrated on secondary concerns but has ignored primary concerns.
   (C) It has improved practical applications of biomaterial technology without providing a complete theoretical explanation of that improvement.
   (D) It has thoroughly investigated properties of biomaterials but has paid little attention to relevant characteristics of human tissue.
   (E) It has provided considerable information on short-term implant technology but little on long-term implant technology.

Islamic law is a particularly instructive example of "sacred law." Islamic law is a phenomenon so different from all other forms of law—notwithstanding, of course, a considerable and inevitable number of coincidences with one or the other of them as far as subject matter and positive enactment are concerned—that its study is indispensable in order to appreciate adequately the full range of possible legal phenomena. Even the two other representatives of sacred law that are historically and geographically nearest to it, Jewish law and Roman Catholic canon law, are perceptibly different.

Both Jewish law and canon law are more uniform than Islamic law. Though historically there is a discernible break between Jewish law of the sovereign state of ancient Israel and of the Diaspora (the dispersion of Jewish people after the conquest of Israel), the spirit of the legal matter in later parts of the Old Testament is very close to that of the Talmud, one of the primary codifications of Jewish law in the Diaspora. Islam, on the other hand, represented a radical breakaway from the Arab paganism that preceded it; Islamic law is the result of an examination, from a religious angle, of legal subject matter that was far from uniform, comprising as it did the various components of the laws of pre-Islamic Arabia and numerous legal elements taken over from the non-Arab peoples of the conquered territories. All this was unified by being subjected to the same kind of religious scrutiny, the impact of which varied greatly, being almost nonexistent in some fields, and in others originating novel institutions. This central duality of legal subject matter and religious norm is additional to the variety of legal, ethical, and ritual rules that is typical of sacred law.

In its relation to the secular state, Islamic law differed from both Jewish and canon law. Jewish law was buttressed by the cohesion of the community, reinforced by pressure from outside; its rules are the direct expression of this feeling of cohesion, tending toward the accommodation of dissent. Canon and Islamic law, on the contrary, were dominated by the dualism of religion and state, where the state was not, in contrast with Judaism, an alien power but the political expression of the same religion. But the conflict between state and religion took different forms; in Christianity it appeared as the struggle for political power on the part of a tightly organized ecclesiastical hierarchy, and canon law was one of its political weapons. Islamic law, on the other hand, was never supported by an organized institution; consequently, there never developed an overt trial of strength. There merely existed discordance between application of the sacred law and many of the regulations framed by Islamic states; this antagonism varied according to place and time.

For the following question, consider each of the choices separately and select all that apply

3. The passage provides information to answer which of the following questions EXCEPT?

Ⅰ Does Islamic law depend on sources other than Arab legal principles?

Ⅱ What secular practices of Islamic states conflicted with Islamic law?

Ⅲ Is Jewish law more uniform than canon law?

4. It can be inferred from the passage that the application of Islamic law in Islamic states has

(A) systematically been opposed by groups who believe it is contrary to their interests

(B) suffered irreparably from the lack of firm institutional backing

(C) frequently been at odds with the legal activity of government institutions

(D) remained unaffected by the political forces operating alongside it

(E) benefited from the fact that it never experienced a direct confrontation with the state

5. Which of the following most accurately describes the organization of the passage?

(A) A universal principle is advanced and then discussed in relation to a particular historical phenomenon.

(B) A methodological innovation is suggested and then examples of its efficacy are provided.

(C) A traditional interpretation is questioned and then modified to include new data.

(D) A general opinion is expressed and then supportive illustrations are advanced.

(E) A controversial viewpoint is presented and then both supportive evidence and contradictory evidence are cited.

6. The passage suggests that canon law differs from Islamic law in that only canon law

(A) contains prescriptions that nonsacred legal systems might regard as properly legal

(B) concerns itself with the duties of a person in regard to the community as a whole

(C) was affected by the tension of the conflict between religion and state

(D) developed in a political environment that did not challenge its fundamental existence

(E) played a role in the direct confrontation between institutions vying for power

If a supernova (the explosion of a massive star) triggered star formation from dense clouds of gas and dust, and if the most massive star to be formed from the cloud evolved into a supernova and triggered a new round of star formation, and so on, then a chain of star-forming regions would result. If many such chains were created in a differentially rotating galaxy, the distribution of stars would resemble the observed distribute in a spiral galaxy.

This line of reasoning underlies an exciting new theory of spiral-galaxy structure. A computer simulation based on this theory has reproduced the appearance of many spiral galaxies without assuming an underlying density wave, the hallmark of the most widely accepted theory of the large-scale structure of spiral galaxies. That theory maintains that a density wave of spiral form sweeps through the central plane of a galaxy, compressing clouds of gas and dust, which collapse into stars that form a spiral pattern. (160 words)

7. The primary purpose of the passage is to
   (A) describe what results when a supernova triggers the creation of chains of star-forming regions
   (B) propose a modification in the most widely accepted theory of spiral-galaxy structure
   (C) compare and contrast the roles of clouds of gas and dust in two theories of spiral-galaxy structure
   (D) describe a new theory of spiral-galaxy structure and contrast it with the most widely accepted theory
   (E) describe a new theory of spiral-galaxy structure and discuss a reason why it is inferior to the most widely accepted theory

8. The passage implies that, according to the new theory of spiral-galaxy structure, a spiral galaxy can be created by supernovas when the supernovas are
   (A) producing an underlying density wave
   (B) affected by a density wave of spiral form
   (C) distributed in a spiral pattern
   (D) located in the central plane of a galaxy
   (E) located in a differentially rotating galaxy

9. Which of the following, if true, would most discredit the new theory as described in the passage?
   (A)The exact mechanism by which a star becomes a supernova is not yet completely known and may even differ for different stars.
   (B) Chains of star-forming regions like those postulated in the new theory have been observed in the vicinity of dense clouds of gas and dust.
   (C) The most massive stars formed from supernova explosions are unlikely to evolve into supernovas.
   (D) Computer simulations of supernovas provide a poor picture of what occurs just before a supernova explosion.
   (E) A density wave cannot compress clouds of gas and dust to a density high enough to create a star.

V-shaped walled structures in central Asia were used by prehistoric hunters who drove hoofed animals into an enclosure at the point of the V. The central Asians who built these structures probably learned this hunting technique from invaders from southwest Asia, because the arrival of invaders from a region in southwest Asia where similar structures had long been used coincides roughly with the building of the earliest of such structures in central Asia.

10. Which of the following, if true, most strengthens the argument?
    (A) Excavations in the central Asian region do not indicate whether invaders from southwest Asia settled permanently in central Asia.
    (B) The V-shaped structures in central Asia were roughly 70 meters long, whereas the similar structures in southwest Asia were usually over 300 meters long.
    (C) The walls of the structures in central Asia were made from earth, whereas the walls of the structures in southwest Asia were made of rock.
    (D) The earliest examples of V-shaped walled structures in central Asia were of an advanced design.
    (E) Some of the walled structures used for hunting in southwest Asia were built well after the earliest such structures were built in central Asia.

The fact that Black people in the English colonies of North America were never treated as the equals of White people has important ramifications. If from the outset Black people were discriminated against, then legal slavery in the 1660's should be viewed as a reflection and an extension of racial prejudice rather than, as many historians including Oscar and Mary Handlin have argued, the cause of prejudice. In addition, the existence of discrimination before the advent of legal slavery offers a further explanation for the harsher treatment of Black slaves in North than in South America. Freyre and Tannenbaum have rightly argued that the lack of certain traditions in North America—such as a Roman conception of slavery and a Roman Catholic emphasis on equality—explains why the treatment of Black slaves was more severe there than in the Spanish and Portuguese colonies of South America. But this cannot be the whole explanation since it is merely negative, based only on a lack of something. A more compelling explanation is that the early and sometimes extreme racial discrimination in the English colonies helped determine the particular nature of the slavery that followed.

(192 words)

For the following question, consider each of the choices separately and select all that apply

11. According to the passage, the Handlins have NOT argued which of the following about the relationship between racial prejudice and the institution of legal slavery in the English colonies of North America?

Ⓐ Racial prejudice and the institution of slavery arose simultaneously.

Ⓑ The source of racial prejudice was the institution of slavery.

Ⓒ Although existing in a lesser form before the 1660's, racial prejudice increased sharply after slavery was legalized.

12. The passage suggests that the existence of a Roman conception of slavery in Spanish and Portuguese colonies had the effect of

(A) extending rather than causing racial prejudice in these colonies

(B) hastening the legalization of slavery in these colonies

(C) mitigating some of the conditions of slavery for Black people in these colonies

(D) delaying the introduction of slavery into the English colonies

(E) bringing about an improvement in the treatment of Black slaves in the English colonies

13. The author considers the explanation put forward by Freyre and Tannenbaum for the treatment accorded Black slaves in the English colonies of North America to be

(A) ambitious but misguided

(B) valid but limited

(C) popular but suspect

(D) anachronistic and controversial

(E) premature and illogical

Exercise 11

Many critics of Emily Bronte's novel *Wuthering Heights* see its second part as a counterpoint that comments on, if it does not reverse, the first part, where a "romantic" reading receives more confirmation. Seeing the two parts as a whole is encouraged by the novel's sophisticated structure, revealed in its complex use of narrators and time shifts. Granted that the presence of these elements need not argue an authorial awareness of novelistic construction comparable to that of Henry James, their presence does encourage attempts to unify the novel's heterogeneous parts. However, any interpretation that seeks to unify all of the novel's diverse elements is bound to be somewhat unconvincing. This is not because such an interpretation necessarily stiffens into a thesis (although rigidity in any interpretation of this or of any novel is always a danger), but because *Wuthering Heights* has recalcitrant elements of undeniable power that, ultimately, resist inclusion in an all-encompassing interpretation. In this respect, *Wuthering Heights* shares a feature of *Hamlet.*

(164 words)

1. According to the passage, which of the following is a true statement about the first and second parts of *Wuthering Heights*?
   (A) The second part has received more attention from critics.
   (B) The second part has little relation to the first part.
   (C) The second part annuls the force of the first part.
   (D) The second part provides less substantiation for a "romantic" reading.
   (E)The second part is better because it is more realistic.

2. Which of the following inferences about Henry James's awareness of novelistic construction is best supported by the passage?
   (A) James, more than any other novelist, was aware of the difficulties of novelistic construction.
   (B) James was very aware of the details of novelistic construction.
   (C) James's awareness of novelistic construction derived from his reading of Bronte.
   (D) James's awareness of novelistic construction has led most commentators to see unity in his individual novels.
   (E) James's awareness of novelistic construction precluded him from violating the unity of his novels.

3. The author of the passage would be most likely to agree that an interpretation of a novel should
   (A) not try to unite heterogeneous elements in the novel
   (B) not be inflexible in its treatment of the elements in the novel
   (C) not argue that the complex use of narrators or of time shifts indicates a sophisticated structure
   (D) concentrate on those recalcitrant elements of the novel that are outside the novel's main structure
   (E) primarily consider those elements of novelistic construction of which the author of the novel was aware

For the following question, consider each of the choices separately and select all that apply

4. The author of the passage suggests which of the following about *Hamlet*?
   Ⅰ *Hamlet* has usually attracted critical interpretations that tend to stiffen into theses.
   Ⅱ *Hamlet* has elements that are not amenable to an all-encompassing critical interpretation.
   Ⅲ *Hamlet* is less open to an all-encompassing critical interpretation than is *Wuthering Heights*.

The deep sea typically has a sparse fauna dominated by tiny worms and crustaceans, with an even sparser distribution of larger animals. However, near hydrothermal vents, areas of the ocean where warm water emerges from subterranean sources, live remarkable densities of huge clams, blind crabs, and fish.

Most deep-sea faunas rely for food on particulate matter, ultimately derived from photosynthesis, falling from above. The food supplies necessary to sustain the large vent communities, however, must be many times the ordinary fallout. The first reports describing vent faunas proposed two possible sources of nutrition: bacterial chemosynthesis, production of food by bacteria using energy derived from chemical changes, and advection, the drifting of food materials from surrounding regions. Later, evidence in support of the idea of intense local chemosynthesis was accumulated: hydrogen sulfide was found in vent water; many vent-site bacteria were found to be capable of chemosynthesis; and extremely large concentrations of bacteria were found in samples of vent water thought to be pure. This final observation seemed decisive. If such astonishing concentrations of bacteria were typical of vent outflow, then food within the vent would dwarf any contribution from advection. Hence, the widely quoted conclusion was reached that bacterial chemosynthesis provides the foundation for hydrothermal-vent food chains—an exciting prospect because no other communities on Earth are independent of photosynthesis.

There are, however, certain difficulties with this interpretation. For example, some of the large sedentary organisms associated with vents are also found at ordinary deep-sea temperatures many meters from the nearest hydrothermal sources. This suggests that bacterial chemosynthesis is not a sufficient source of nutrition for these creatures. Another difficulty is that similarly dense populations of large deep-sea animals have been found in the proximity of "smokers" –vents where water emerges at temperatures up to 350 ℃. No bacteria can survive such heat, and no bacteria were found there. Unless smokers are consistently located near more hospitable warm-water vents, chemosynthesis can account for only a fraction of the vent faunas. It is conceivable, however, that these large, sedentary organisms do in fact feed on bacteria that grow in warm-water vents, rise in the vent water, and then rain in peripheral areas to nourish animals living some distance from the warm-water vents.

Nonetheless, advection is a more likely alternative food source. Research has demonstrated that advective flow, which originates near the surface of the ocean where suspended particulate matter accumulates, transports some of that matter and water to the vents. Estimates suggest that for every cubic meter of vent discharge, 350 milligrams of particulate organic material would be advected into the vent area. Thus, for an average-sized vent, advection could provide more than 30 kilograms of potential food per day. In addition, it is likely that small live animals in the advected water might be killed or stunned by thermal and/or chemical shock, thereby contributing to the food supply of vents.

(479 words)

For the following question, consider each of the choices separately and select all that apply

5. The passage provides information for answering which of the following questions EXCEPT?

Ⅰ What causes warm-water vents to form?

Ⅱ What role does hydrogen sulfide play in chemosynthesis?

Ⅲ Do bacteria live in the vent water of smokers?

6. The information in the passage suggests that the majority of deep-sea faunas that live in nonvent habitats have which of the following characteristics?

(A) They do not normally feed on particles of food in the water.

(B) They are smaller than many vent faunas.

(C) They are predators.

(D) They derive nutrition from a chemosynthetic food source.

(E) They congregate around a single main food source.

7. Select the sentence in the passage in which the author implies that vents are colonized by some of the same animal found in other areas of the ocean floor, which might be a weakness for the bacterial chemosynthesis model.

8. The author refers to “smokers” in the third paragraph most probably in order to

(A) show how thermal shock can provide food for some vent faunas by stunning small animals

(B) prove that the habitat of most deep-sea animals is limited to warm-water vents

(C) explain how bacteria carry out chemosynthesis

(D) demonstrate how advection compensates for the lack of food sources on the seafloor

(E) present evidence that bacterial chemosynthesis may be an inadequate source of food for some vent faunas

Ragtime is a musical form that synthesizes folk melodies and musical techniques into a brief quadrille-like structure, designed to be played—exactly as written
Line —on the piano. A strong analogy exists between
5 European composers like Ralph Vaughan Williams, Edward Grieg, and Anton Dvorak who combined folk tunes and their own original materials in larger compositions and the pioneer ragtime composers in the United States. Composers like Scott Joplin and James
10 Scott were in a sense collectors or musicologists, collecting dance and folk music in Black communities and consciously shaping it into brief suites or anthologies called piano rags.

(100 words)

9. Which of the following is most nearly analogous in source and artistic character to a ragtime composition as described in the passage?

(A) Symphonic music derived from complex jazz motifs
(B) An experimental novel based on well-known cartoon characters
(C) A dramatic production in which actors invent scenes and improvise lines
(D) A ballet whose disciplined choreography is based on folk-dance steps
(E) A painting whose abstract shapes evoke familiar objects in a natural landscape

Geologists have long known that the Earth's mantle is heterogeneous, but its spatial arrangement remains unresolved—is the mantle essentially layered or irregularly heterogeneous? The best evidence for the layered-mantle thesis is the well-established fact that volcanic rocks found on oceanic islands, islands believed to result from mantle plumes arising from the lower mantle, are composed of material fundamentally different from that of the midocean ridge system, whose source, most geologists contend, is the upper mantle.

Some geologists, however, on the basis of observations concerning mantle xenoliths, argue that the mantle is not layered, but that heterogeneity is created by fluids rich in "incompatible elements" (elements tending toward liquid rather than solid state) percolating upward and transforming portions of the upper mantle irregularly, according to the vagaries of the fluids' pathways. We believe, perhaps unimaginatively, that this debate can be resolved through further study, and that the underexplored midocean ridge system is the key.

(157 words)

10. According to the passage, it is believed that oceanic islands are formed from
(A) the same material as mantle xenoliths
(B) the same material as the midocean ridge system
(C) volcanic rocks from the upper mantle
(D) incompatible elements percolating up from the lower mantle
(E) mantle plumes arising from the lower mantle

For the following question, consider each of the choices separately and select all that apply

11. It can be inferred from the passage that the supporters of the "layered-mantle" theory believe which of the following?

Ⓐ The volcanic rocks on oceanic islands are composed of material derived from the lower part of the mantle.

Ⓑ The materials of which volcanic rocks on oceanic islands and midocean ridges are composed are typical of the layers from which they are thought to originate.

Ⓒ The differences in composition between volcanic rocks on oceanic islands and the midocean ridges are a result of different concentrations of incompatible elements.

12. In the context of the passage, "unimaginatively" is closest in meaning to
(A) pedestrian
(B) controversial
(C) unrealistic
(D) novel
(E) paradoxical

No one can be licensed as an electrician in Parker County without first completing a certain course in electrical safety procedures. All students majoring in computer technology at Parker County Technical College must complete that course before graduating. Therefore, any of the college's graduates in computer technology can be licensed as an electrician in Parker County.

13. The answer to which of the following would be most helpful in evaluating the argument?
    (A) Is a college degree a requirement for being licensed as an electrician in Parker County?
    (B) Do all students majoring in computer technology who complete the course in electrical safety procedures at Parker County Technical College eventually graduate?
    (C) Is completion of a course in electrical safety procedures the only way a person licensed as an electrician in Parker County can have learned those procedures?
    (D) Is a period of practical apprenticeship a requirement for becoming a licensed electrician in Parker County but not for graduating from the college in computer technology?
    (E) Do any of the students at Parker County Technical College who are not majoring in computer technology take the course in electrical safety procedures?

Exercise 12

Traditional research has confronted only Mexican and United States interpretations of Mexican-American culture. Now we must also examine the culture as we
Line Mexican Americans have experienced it, passing from
5 a sovereign people to compatriots with newly arriving settlers to, finally, a conquered people—a charter minority on our own land.

When the Spanish first came to Mexico, they inter-married with and absorbed the culture of the indigenous
10 Indians. This policy of colonization through acculturation was continued when Mexico acquired Texas in the early 1800's and brought the indigenous Indians into Mexican life and government. In the 1820's, United States citizens migrated to Texas, attracted by land suitable for cotton.
15 As their numbers became more substantial, their policy of acquiring land by subduing native populations began to dominate. The two ideologies clashed repeatedly, culminating in a military conflict that led to victory for the United States. Thus, suddenly deprived of our parent
20 culture, we had to evolve uniquely Mexican-American modes of thought and action in order to survive.

(168 words)

1. The author's purpose in writing this passage is primarily to
   (A) suggest the motives behind Mexican and United States intervention in Texas
   (B) document certain early objectives of Mexican-American society
   (C) provide a historical perspective for a new analysis of Mexican-American culture
   (D) appeal to both Mexican and United States scholars to give greater consideration to economic interpretations of history
   (E) bring to light previously overlooked research on Mexican Americans

2. The author most probably uses the phrase "charter minority" (lines 6-7) to reinforce the idea that Mexican Americans
   (A) are a native rather than an immigrant group in the United States
   (B) played an active political role when Texas first became part of the United States
   (C) recognized very early in the nineteenth century the need for official confirmation of their rights of citizenship
   (D) have been misunderstood by scholars trying to interpret their culture
   (E) identify more closely with their Indian heritage than with their Spanish heritage

3. Which of the following statements most clearly contradicts the information in this passage?
   (A) In the early 1800's, the Spanish committed more resources to settling California than to developing Texas.
   (B) While Texas was under Mexican control, the population of Texas quadrupled, in spite of the fact that Mexico discouraged immigration from the United States.
   (C) By the time Mexico acquired Texas, many Indians had already married people of Spanish heritage.
   (D) Many Mexicans living in Texas returned to Mexico after Texas was annexed by the United States.
   (E) Most Indians living in Texas resisted Spanish acculturation and were either killed or enslaved.

The determination of the sources of copper ore used in the manufacture of copper and bronze artifacts of Bronze Age civilizations would add greatly to our knowledge of cultural contacts and trade in that era. Researchers have analyzed artifacts and ores for their concentrations of elements, but for a variety of reasons, these studies have generally failed to provide evidence of the sources of the copper used in the objects. Elemental composition can vary within the same copper-ore lode, usually because of varying admixtures of other elements, especially iron, lead, zinc, and arsenic. And high concentrations of cobalt or zinc, noticed in some artifacts, appear in a variety of copper-ore sources. Moreover, the processing of ores introduced poorly controlled changes in the concentrations of minor and trace elements in the resulting metal. Some elements evaporate during smelting and roasting; different temperatures and processes produce different degrees of loss. Finally, flux, which is sometimes added during smelting to remove waste material from the ore, could add quantities of elements to the final product.

An elemental property that is unchanged through these chemical processes is the isotopic composition of each metallic element in the ore. Isotopic composition, the percentages of the different isotopes of an element in a given sample of the element, is therefore particularly suitable as an indicator of the sources of the ore. Of course, for this purpose it is necessary to find an element whose isotopic composition is more or less constant throughout a given ore body, but varies from one copper ore body to another or, at least, from one geographic region to another.

The ideal choice, when isotopic composition is used to investigate the source of copper ore, would seem to be copper itself. It has been shown that small but measurable variations occur naturally in the isotopic composition of copper. However, the variations are large enough only in rare ores; between samples of the common ore minerals of copper, isotopic variations greater than the measurement error have not been found. An alternative choice is lead, which occurs in most copper and bronze artifacts of the Bronze Age in amounts consistent with the lead being derived from the copper ores and possibly from the fluxes. The isotopic composition of lead often varies from one source of common copper ore to another, with variations exceeding the measurement error; and preliminary studies indicate virtually uniform isotopic composition of the lead from a single copper-ore source. While some of the lead found in an artifact may have been introduced from flux or when other metals were added to the copper ore, lead so added in Bronze Age processing would usually have the same isotopic composition as the lead in the copper ore. Lead isotope studies may thus prove useful for interpreting the archaeological record of the Bronze Age.

(473 words)

4. The author first mentions the addition of flux during smelting in the last sentence in the first paragraph in order to
   (A) give a reason for the failure of elemental composition studies to determine ore sources
   (B) illustrate differences between various Bronze Age civilizations
   (C) show the need for using high smelting temperatures
   (D) illustrate the uniformity of lead isotope composition
   (E) explain the success of copper isotope composition analysis

For the following question, consider each of the choices separately and select all that apply

5. According to the passage, possible sources of the lead found in a copper or bronze artifact include which of the following?
   Ⓐ The copper ore used to manufacture the artifact
   Ⓑ Flux added during processing of the copper ore
   Ⓒ Other metal added during processing of the copper ore

6. Select the sentence in the passage that the author rejects copper as the "ideal choice".

7. It can be inferred from the passage that the use of flux in processing copper ore can alter the lead isotope composition of the resulting metal EXCEPT when
   (A) there is a smaller concentration of lead in the flux than in the copper ore
   (B) the concentration of lead in the flux is equivalent to that of the lead in the ore
   (C) some of the lead in the flux evaporates during processing
   (D) any lead in the flux has the same isotopic composition as the lead in the ore
   (E) other metals are added during processing

Echolocating bats emit sounds in patterns—characteristic of each species—that contain both frequency-modulated (FM) and constant-frequency (CF) signals. The broadband FM signals and the narrowband CF signals travel out to a target, reflect from it, and return to the hunting bat. In this process of transmission and reflection, the sounds are changed, and the changes in the echoes enable the bat to perceive features of the target.

The FM signals report information about target characteristics that modify the timing and the fine frequency structure, or spectrum, of echoes—for example, the target's size, shape, texture, surface structure, and direction in space. Because of their narrow bandwidth, CF signals portray only the target's presence and, in the case of some bat species, its motion relative to the bat's. Responding to changes in the CF echo's frequency, bats of some species correct in flight for the direction and velocity of their moving prey.

(150 words)

8. According to the passage, the information provided to the bat by CF echoes differs from that provided by FM echoes in which of the following ways?
   (A) Only CF echoes alert the bat to moving targets.
   (B) Only CF echoes identify the range of widely spaced targets.
   (C) Only CF echoes report the target's presence to the bat.
   (D) In some species, CF echoes enable the bat to judge whether it is closing in on its target.
   (E) In some species, CF echoes enable the bat to discriminate the size of its target and the direction in which the target is moving.

9. Which of the following best describes the organization of the passage?
   (A) A fact is stated, a process is outlined, and specific details of the process are described.
   (B) A fact is stated, and examples suggesting that a distinction needs correction are considered.
   (C) A fact is stated, a theory is presented to explain that fact, and additional facts are introduced to validate the theory.
   (D) A fact is stated, and two theories are compared in light of their explanations of this fact.
   (E) A fact is stated, a process is described, and examples of still another process are illustrated in detail.

10. Which of the following most logically completes the argument?

Virtually all respondents to a recent voter survey reported allegiance to one of the two major political parties. But over a third of the voters from each party reported being so disenchanted with the governing philosophies of both parties that they might join a third major party if one were formed. Even if this poll reflects general voter sentiment, however, there is no chance that a new party could attract a third of all voters, since _____.

(A) the current level of disenchantment with the governing philosophies of the two major parties is unprecedented
(B) the disenchanted members of the two major parties are attracted to very different governing philosophies
(C) most respondents overestimated the proportion of voters disenchanted with both parties, saving that the proportion was more than 50 percent
(D) nearly half of all respondents reported that they would be more likely to cease voting altogether than to switch their party affiliation
(E) any new party would be likely to inspire citizens who have not voted before to join and to become regular voters

Until about five years ago, the very idea that peptide hormones might be made anywhere in the brain besides the hypothalamus was astounding. But laboratory after laboratory found that antiserums to peptide hormones, when injected into the brain, bind in places other than the hypothalamus, indicating that either the hormones or substances that cross-react with the antiserums are present. The immunological method of detecting peptide hormones by means of antiserums, however, is imprecise. Cross-reactions are possible and this method cannot determine whether the substances detected by the antiserums really are the hormones, or merely close relatives. Furthermore, this method cannot be used to determine the location in the body where the detected substances are actually produced. New techniques of molecular biology, however, provide a way to answer these questions. It is possible to make specific complementary DNA's (cDNA's) that can serve as molecular probes to seek out the messenger RNA's (mRNA's) of the peptide hormones. The brain cells containing these mRNA's can then be isolated and their mRNA's decoded to determine just what their protein products are and how closely the products resemble the true peptide hormones.

(187 words)

11. Which of the following titles best summarizes the passage?
(A) Is Molecular Biology the Key to Understanding Intercellular Communication in the Brain?
(B) Molecular Biology: Can Researchers Exploit Its Techniques to Synthesize Peptide Hormones?
(C) The Advantages and Disadvantages of the Immunological Approach to Detecting Peptide Hormones
(D) Peptide Hormones: How Scientists Are Attempting to Solve Problems of Their Detection
(E) Peptide Hormones: The Role Played by Messenger RNA's in Their Detection

12. The passage suggests that a substance detected in the brain by use of antiserums to peptide hormones may
(A) have been stored in the brain for a long period of time
(B) play no role in the functioning of the brain
(C) have been produced in some part of the body other than the brain
(D) have escaped detection by molecular methods
(E) play an important role in the functioning of the hypothalamus

13. Which of the following is mentioned in the passage as a drawback of the immunological method of detecting peptide hormones?
(A) It cannot be used to detect the presence of growth regulators in the brain.
(B) It cannot distinguish between the peptide hormones and substances that are very similar to them.
(C) It uses antiserums that are unable to cross the blood-brain barrier.
(D) It involves a purification process that requires extensive training in endocrinology.
(E) It involves injecting foreign substances directly into the bloodstream.

Exercise 13

Biologists have long maintained that two groups of pinnipeds, sea lions and walruses, are descended from a terrestrial bearlike animal, whereas the remaining *Line* group, seals, shares an ancestor with weasels. But the *5* recent discovery of detailed similarities in the skeletal structure of the flippers in all three groups undermines the attempt to explain away superficial resemblance as due to convergent evolution—the independent development of similarities between unrelated groups in *10* response to similar environmental pressures. Flippers may indeed be a necessary response to aquatic life; turtles, whales, and dugongs also have them. But the common detailed design found among the pinnipeds probably indicates a common ancestor. Moreover, *15* walruses and seals drive themselves through the water with thrusts of their hind flippers, but sea lions use their front flippers. If anatomical similarity in the flippers resulted from similar environmental pressures, as posited by the convergent-evolution theory, one *20* would expect walruses and seals, but not seals and sea lions, to have similar flippers. (162 words)

1. The author implies that which of the following was part of the long-standing view concerning pinnipeds?

Ⓐ Pinnipeds are all descended from a terrestrial bearlike animal.

Ⓑ Pinnipeds share a common ancestor with turtles, whales, and dugongs

Ⓒ Similarities among pinnipeds are due to their all having had to adapt to aquatic life.

2. The author implies which of the following about the fact that turtles, whales, and dugongs all have flippers?

Ⓐ It can be explained by the hypothesis that turtles, whales, and dugongs are very closely related.

Ⓑ It can be explained by the idea of convergent evolution.

Ⓒ It suggests that turtles, whales, and dugongs evolved in separate parts of the world

Ⓓ It undermines the view that turtles, whales, and dugongs are all descended from terrestrial ancestors.

Ⓔ It is the primary difference between turtles, whales, and dugongs, on the one hand, and pinnipeds, on the other.

3. Select the sentence in the passage in which the author shows that the implication of the common view is contradicted by a new finding.

Question 4 is based on the following reading passage.

According to astronomer S.A. Phinney, kicking a rock hard enough to free it from Earth's gravity would require a meteorite capable of making a crater more than 60 miles across. Moreover, even if Earth rocks were freed by meteorite impact, Mars's orbit is much larger than Earth's, so Phinney estimates that the probability of these rocks hitting Mars is about one-tenth as great as that of Mars's rocks hitting Earth. To demonstrate this estimate, Phinney used a computer to calculate where 1,000 hypothetical particles would go if ejected from Earth in random directions. He found that 17 of the 1,000 particles would hit Mars.

4. Which of the following, if true, would cast most doubt on Phinney's estimate of the probability of Earth rocks hitting Mars?

(A) Rather than going in random directions, about 25 percent of all particles ejected from Earth go in the same direction into space.

(B) Approximately 100 meteorites large enough to make a noticeable crater hit the Earth each year.

(C) No rocks of Earth origin have been detected on Mars.

(D) The velocity of rocks escaping from Earth's gravity is lower than the velocity of meteorites hitting the Earth.

(E) No craters more than 60 miles across have been found on Mars.

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For each of Questions 5-8, select <u>one</u> answer choice unless otherwise instructed.
Questions 5 to 8 are based on the following reading passage.

Present-day philosophers usually envision their discipline as an endeavor that has been, since antiquity, distinct from and superior to any particular intellectual discipline such as theology or science. Such philosophical concerns as the mind-body problem or, more generally, the nature of human knowledge they believe, are basic human questions whose tentative philosophical solutions have served as the necessary foundations on which all other intellectual speculation has rested.

The basis for this view, however, lies in a serious misinterpretation of the past, a projection of modern concerns onto past events. The idea of an autonomous discipline called "philosophy," distinct from and sitting in judgment on such pursuits as theology and science, turns out, on close examination, to be of quite recent origin. When, in the seventeenth century, Descartes and Hobbes rejected medieval philosophy, they did not think of themselves, as modern philosophers do, as proposing a new and better philosophy, but rather as furthering "the warfare between science and theology." They were fighting, albeit discreetly, to open the intellectual world to the new science and to liberate intellectual life from ecclesiastical philosophy and envisioned their work as contributing to the growth, not of philosophy, but of research in mathematics and physics. This link between philosophical interests and scientific practice persisted until the nineteenth century, when decline in ecclesiastical power over scholarship and changes in the nature of science provoked the final separation of philosophy from both.

The demarcation of philosophy from science was facilitated by the development in the early nineteenth century of a new notion, that philosophy's core interest should be epistemology, the general explanation of what it means to know something. Modern philosophers now trace that notion back at least to Descartes and Spinoza, but it was not explicitly articulated until the late eighteenth century, by Kant, and did not become built into the structure of academic institutions and the standard self-descriptions of philosophy professors until the late nineteenth century. Without the idea of epistemology, the survival of philosophy in an age of modern science is hard to imagine. Metaphysics, philosophy's traditional core—considered as the most general description of how the heavens and the earth are put together—had been rendered almost completely meaningless by the spectacular progress of physics. Kant, however, by focusing philosophy on the problem of knowledge, managed to replace metaphysics with epistemology, and thus to transform the notion of philosophy as "queen of sciences" into the new notion of philosophy as a separate, foundational discipline: philosophy became "primary" no longer in the sense of "highest" but in the sense of "underlying". After Kant, philosophers were able to reinterpret seventeenth-and eighteenth-century thinkers as attempting to discover "How is our knowledge possible?" and to project this question back even on the ancients.

(456 words)

5. Which of the following best expresses the author's main point?

Ⓐ Philosophy's overriding interest in basic human questions is a legacy primarily of the work of Kant.

Ⓑ Philosophy was deeply involved in the seventeenth-century warfare between science and religion.

Ⓒ The set of problems of primary importance to philosophers has remained relatively constant since antiquity.

Ⓓ The status of philosophy as an independent intellectual pursuit is a relatively recent development.

Ⓔ The role of philosophy in guiding intellectual speculation has gradually been usurped by science.

6. The author of the passage implies which of the following in discussing the development of philosophy during the nineteenth century?

(A) Nineteenth-century philosophy took science as its model for understanding the bases of knowledge.

(B) The role of academic institutions in shaping metaphysical philosophy grew enormously during the nineteenth century.

(C) Nineteenth-century philosophers carried out a program of investigation explicitly laid out by Descartes and Spinoza.

(D) Kant had an overwhelming impact on the direction of nineteenth-century philosophy.

(E) Nineteenth-century philosophy made major advances in understanding the nature of knowledge.

7. The author suggests that Descartes' support for the new science of the seventeenth century can be characterized as

(A) pragmatic and hypocritical

(B) cautious and inconsistent

(C) daring and opportunistic

(D) intense but fleeting

(E) strong but prudent

8. With which of the following statements concerning the writing of history would the author of the passage be most likely to agree?

(A) History should not emphasize the role played by ideas over the role played by individuals.

(B) History should not be distorted by attributing present-day consciousness to historical figures.

(C) History should not be focused primarily on those past events most relevant to the present.

(D) History should be concerned with describing those aspects of the past that differ most from those of the present.

(E) History should be examined for the lessons it can provide in understanding current problems.

When amphibians first appeared on Earth millions of years ago, the amount of ultraviolet radiation penetrating Earth's atmosphere was much greater than it is today. Therefore, current dramatic decreases in amphibian populations cannot be the result of recent increases in ultraviolet radiation penetrating Earth's atmosphere.

9. Which of the following is an assumption on which the argument depends?

(A) The eggs of modern amphibians are not significantly more vulnerable to ultraviolet radiation than the eggs of the first amphibians were.

(B) Modern amphibians are not as likely as the first amphibians were to live in habitats that shield them from ultraviolet radiation.

(C) Populations of modern amphibians are not able to adapt to changing levels of radiation as readily as populations of early amphibians were.

(D) The skin of amphibians is generally more sensitive to ultraviolet radiation than the skin of other animals is.

(E) The skin of amphibians is less sensitive to ultraviolet radiation than to other types of radiation.

Questions 10 to 12 are based on the following reading passage

Hank Morgan, the hero of Mark Twain's *A Connecticut Yankee in King Arthur's Court*, is a nineteenth-century master mechanic who, mysteriously awakening in sixth-century Britain, launches what he hopes will be a peaceful revolution to transform Arthurian Britain into an industrialized modern democracy. The novel, written as a spoof of Thomas Malory's *Morte d'Arthur*, a popular collection of fifteenth-century legends about sixth-century Britain, has been made into three upbeat movies and two musical comedies. None of these translations to screen and stage, however, dramatize the anarchy at the conclusion of *A Connecticut Yankee*, which ends with the violent overthrow of Morgan's three-year-old progressive order and his return to the nineteenth century, where he apparently commits suicide after being labeled a lunatic for his incoherent babblings about drawbridges and battlements. The American public, although enjoying Twain's humor, evidently rejected his cynicism about technological advancement and change through peaceful revolution as antithetical to the United States doctrine of progress.

10.According to the passage, which of the following is a true statement about the reception of *A Connecticut Yankee in King Arthur's Court* by the American public?

Ⓐ The public had too strong a belief in the doctrine of progress to accept the cynicism demonstrated at the conclusion of Twain's novel.

Ⓑ Twain's novel received little public recognition until the work was adapted for motion pictures and plays.

Ⓒ Although the public enjoyed Twain's humor, his use of both sixth-century and nineteenth-century characters confused many people.

Ⓓ The public has continued to enjoy Twain's story, but the last part of the novel seems too violent to American minds.

Ⓔ Because of the cynicism at the end of the book, the public rejected Twain's work in favor of the work of Thomas Malory.

For the following question, consider each of the choices separately and select all that apply

11. It can be inferred from the passage that Mark Twain would most probably have believed in which of the following statements about societal change?

Ⓐ Technological advancements are limited in their ability to change society and will likely bring liabilities along with any potential benefits.

Ⓑ The belief in the unmitigated benefits of societal change is antithetical to the American doctrine of progress.

Ⓒ Technological advances and peaceful revolutions, although sometimes accompanied by unintended violence and resistance to societal change, eventually lead to a more progressive order.

12.The author uses the examples of "three upbeat movies and two musical comedies"(lines 9-10) primarily in order to demonstrate that

Ⓐ well-written novels like *A Connecticut Yankee in King Arthur's Court*, regardless of their tone or theme, can be translated to the stage and screen.

Ⓑ the American public has traditionally been more interested in watching plays and movies than in reading novels like *A Connecticut Yankee in King Arthur's Court*

Ⓒ Twain's overall message in *A Connecticut Yankee in King Arthur's Court* is one that had a profound impact on the American public.

Ⓓ Twain's *A Connecticut Yankee in King Arthur's Court* has been a more popular version of the Arthurian legends than has Malory's *Morte d'Arthur*

Ⓔ *A Connecticut Yankee in King Arthur's Court* has been accepted as an enjoyable and humorous tale in versions that have omitted the anarchy at the novel's conclusion

Exercise 14

For each of Questions 1-3, select <u>one</u> answer choice unless otherwise instructed.

Questions 1 to 3 are based on the following reading passage.

Paule Marshall's *Brown Girl, Brownstones* (1959) was a landmark in the depiction of female characters in Black American literature. Marshall avoided the oppressed and
Line tragic heroine in conflict with White society that had been
5 typical of the protest novels of early twentieth century. Like her immediate predecessors, Zora Neale Hurston and Gwendolyn Brooks, she focused her novel on an ordinary Black woman's search for identity within the context of a Black community. But Marshall extended the
10 analysis of Black female characters begun by Hurston and Brooks by depicting her heroine's development in terms of the relationship between her Barbadian American parents, and by exploring how male and female roles were defined by their immigrant culture, which in turn
15 was influenced by the materialism of White America. By placing characters within a wider cultural context, Marshall attacked racial and sexual stereotypes and paved the way for explorations of race, class, and gender in the novels of the 1970's.

For the following question, consider each of the choices separately and select all that apply

1. It can be inferred that the author of the passage would describe *Brown Girl, Brownstones* as being

Ⓐ highly influenced by novels written in the early twentieth century

Ⓑ important in the late 1950's but dated today

Ⓒ an important influence on novels written in the1970's

2. According to the passage, Hurston, Brooks, and Marshall are alike in that they

Ⓐ did not examine the effects of White culture on their characters' lives

Ⓑ were heavily influenced by the protest novels of the early twentieth century

Ⓒ used Black communities as the settings for their novels.

Ⓓ wrote primarily about the difficulties their characters encountered in White culture

Ⓔ wrote exclusively about female characters and the experiences of women

3. The author’s description of the way in which Marshall depicts her heroine's development is most probably intended to

Ⓐ continue the discussion of similarities in the works of Brooks, Hurston, and Marshall

Ⓑ describe the specific racial and sexual stereotypes that Marshall attacked

Ⓒ contrast the characters in Marshall's novels with those in later works

Ⓓ show how Marshall extends the portrayal of character initiated by her predecessors

Ⓔ compare themes in Marshall's early work with themes in her later novels

Question 4 is based on the following reading passage.

Calculations of the density of alloys based on Bernal-type models of the alloy's metal component agreed fairly well with the experimentally determined values from measurements on alloys consisting of a noble metal together with a metalloid, such as alloys of palladium and silicon, or alloys consisting of iron, phosphorus, and carbon, although small discrepancies remained. One difference between real alloys and the hard spheres used in Bernal models is that the components of an alloy have different sizes, so that models based on two sizes of spheres are more appropriate for a binary alloy, for example. The smaller metalloid atoms of the alloy might fit into holes in the dense, random-packed structure of the larger metal atoms.

4. The author's speculation about the appropriateness of models using spheres of two sizes for binary alloys would be strongly supported if models using spheres of two sizes yielded

(A) values for density identical to values yielded by one-sphere models using the smaller spheres only
(B) values for density agreeing nearly perfectly with experimentally determined values
(C) values for density agreeing nearly perfectly with values yielded by models using spheres of three sizes
(D) significantly different values for density depending on the size ratio between the two kinds of spheres used
(E) the same values for density as the values for appropriately chosen models that use only medium-sized spheres

Questions 5 and 6 are based on the following reading passage.

One of the principal themes of Walzer's critique of liberal capitalism is that it is insufficiently egalitarian. Walzer's case against the economic inequality generated by
Line capitalism and in favor of "a radical redistribution of
5 wealth" is presented in a widely cited essay entitled "In Defense of Equality." The most striking feature of Walzer's critique is that, far from rejecting the principle of reward according to merit, Walzer insists on its validity. People who excel should receive the superior
10 benefits appropriate to their excellence. But people exhibit a great variety of qualities—"intelligence, physical strength, agility and grace, artistic creativity, mechanical skill, leadership, endurance, memory, psychological insight, the capacity for hard
15 work—even moral strength, sensitivity, the ability to express compassion."Each deserves its proper recompense, and hence a proper distribution of material goods should reflect human differences as measured on all these different scales. Yet, under capitalism, the ability
20 to make money ("the green thumb of bourgeois society") enables its possessor to acquire almost "every other sort of social good," such as the respect and esteem of others.

For the following question, consider each of the choices separately and select all that apply

5.The passage provides sufficient information to answer which of the following questions EXCEPT?

Ⓐ What weight in relation to other qualities should a quality like sensitivity have, according to Walzer, in determining the proper distribution of goods?
Ⓑ Which quality does Walzer deem too highly valued under liberal capitalism?
Ⓒ Which are the social goods that are, according to Walzer, outside the reach of the power of money?

6. The author implies that Walzer's interpretation of the principle of reward according to merit is distinctive for its

Ⓐ insistence on maximizing everyone's rewards
Ⓑ emphasis on equality
Ⓒ proven validity
Ⓓ broad conception of what constitutes merit
Ⓔ broad conception of what constitutes a reward

Questions 7 to 9 are based on the following reading passage.

National character is not formally considered by social scientists in discussing economic and social development today. They believe that people differ and
Line that these differences should be taken into account
5 somehow, but they have as yet discovered no way to include such variables in their formal models of economic and social development. The difficulty lies in the nature of the data that supposedly define different national characters. Anthropologists and others are on
10 much firmer ground when they attempt to describe the cultural norms for a small homogeneous tribe or village than when they undertake the formidable task of discovering the norms that exist in a complex modern nation-state composed of many disparate groups. The
15 situation is further complicated by the nature of judgments about character; since such judgments are overly dependent on impressions and since, furthermore, impressions are usually stated in qualitative terms, it is impossible to make a reliable comparison between the national characters of two countries.

7. The author's main point in the passage is that national character

Ⓐ is too elusive to merit attention by anthropologists and other social scientists.

Ⓑ is of greater interest to social scientists today than it has been in the past.

Ⓒ is still too difficult to describe with the precision required by many social scientists.

Ⓓ has become increasingly irrelevant because of the complexity of modern lift.

Ⓔ can be described more accurately by anthropologists than by other social scientists.

For the following question, consider each of the choices separately and select all that apply

8. It can be inferred from the passage that the social scientists mentioned in the first two sentences would agree with which of the following statements?

Ⓐ It is extremely difficult to create models that account for both economic and social development

Ⓑ Models of economic and social development would be improved by the inclusion of adequate descriptions of national character.

Ⓒ it is important to supplement formal models of economic and social development with qualitative impressions of national character.

9. Which of the following best describes the organization of the passage?

Ⓐ A problem is presented and reasons for its existence are supplied.

Ⓑ A controversial view is presented and evidence for its validity is supplied.

Ⓒ A hypothesis is presented and possible means of verifying it are suggested.

Ⓓ A recent development is described and then analyzed.

Ⓔ A dispute is summarized and one side defended.

Questions 10 and 11 are based on the following reading passage.

It is now established that the Milky Way is far more extended and of much greater mass than was hitherto thought. However, all that is visible of the constituents of the Milky Way's corona (outer edge), where much of the galaxy's mass must be located, is a tiny fraction of the corona's mass. Thus, most of the Milky Way's outlying matter must be dark.

Why? Three facts are salient. First, dwarf galaxies and globular clusters, into which most of the stars of the Milky Way's corona are probably bound, consist mainly of old stars. Second, old stars are not highly luminous. Third, no one has detected in the corona the clouds of gaseous matter such as hydrogen and carbon monoxide that are characteristic of the bright parts of a galaxy.

10. The passage as a whole is primarily concerned with

(A) analyzing a current debate
(B) criticizing a well-established theory
(C) showing how new facts support a previously dismissed hypothesis
(D) stating a conclusion and adducing evidence that may justify it
(E) contrasting two types of phenomena and showing how they are related

11. Select the sentence that the author implicitly indicates what astronomers believed about the Milky Way until fairly recently.

Question 12 is based on the following reading passage.

In electrides, the anions (negative ions) are completely replaced by electrons, which are trapped in naturally formed cavities within a framework of regularly stacked cations (positive ions). Unlike other types of anions, anionic electrons do not behave as if they were simple charged spheres. The properties of an electride depend largely on the distance between the cavities that hold trapped electrons. When the trapped electrons are far apart, they do not interact strongly, and so behave somewhat like an array of isolated negative charges. When they are closer together, they begin to display properties associated with large ensembles of identical particles. When they are still closer, the ensemble properties dominate and the electrons "delocalize".

12. It can be inferred from the passage that an electride behaves most like a normal ionic crystal when the electride has which of the following features?

(A) The anionic cavities are widely separated.
(B) All of the trapped electrons are able to delocalize.
(C) The trapped electrons are liberated by impinging photons.
(D) The ions are tightly packed together.
(E) Most of the cations have lost their electrical charge.

Exercise 15

Questions 1 to 3 are based on the following reading passage.

Typically the queen honeybee is mother to all the bees in a hive; after mating with several male drones from other colonies, she lays fertilized eggs that develop into
Line all-female worker bees and lays unfertilized eggs that
5 become all-male drones. According to natural selection theory, a worker would enhance her fitness --or ability to propagate her genes-by hatching her own eggs in addition to or in place of the queen's. But a typical worker's fitness would be diminished if other workers' sons, who have
10 less genetic material in common with the worker, supplanted the queen's sons (the worker's brothers). Researchers, testing the hypothesis that workers usually somehow block each other's attempts to reproduce, put unfertilized eggs laid by workers and by the queen into a
15 hive. Other workers quickly devoured the workers' eggs while leaving the queen's eggs alone.

1. Select the sentence that is used as evidence that worker bees are capable of thwarting each other's attempts to reproduce.

2. The inner workings in a honeybee hive that regulate reproduction, as they are described in the passage, are most similar to which of the following types of human societies?
   (A) A totalitarian society in which citizens' "policing" of each other's actions helps to maintain the status quo.
   (B) A pacifist state in which the individuals are strongly opposed to the use of violence or aggression to settle disputes.
   (C) A democratic society in which the voice of the majority rules.
   (D) A parliamentary society in which a few members, organized as a cabinet wield executive power.
   (E) An anarchic state in which order and stable social structures are lacking

3. The passage best supports which of the following inferences about the fitness of honeybees?
   (A) Reproduction diminishes any individual honey-bee's fitness.
   (B) An individual worker's fitness can be maintained without the individual herself reproducing.
   (C) A hierarchy of stronger and weaker individuals among the worker bees determines which individuals will reproduce when a queen dies.
   (D) While a queen reigns, the fitness of the worker bees is increased and that of the drones is diminished.
   (E) Fitness encourages worker bees to hatch honeybee eggs without regard for the relatedness of the young to the "parent".

According to ancient records, the first tax that the government of Selea imposed on a basic commodity was a tax of two centima coins on every jar of cooking oil sold in Selea. Tax records show that despite a stable population and strict enforcement of tax laws, revenues from the oil tax declined steeply over the first two years that the tax was in effect.

4. Which of the following, if true, most helps to explain the decline in Selean oil-tax revenues?

(A) During the decade following the implementation of the tax, the average household income in Selea rose steadily.
(B) Two years after implementing the tax on cooking oil, the Selean government began to implement taxes on numerous other basic commodities.
(C) Jars of cooking oil were traditionally bought as wedding gifts in Selea at the time the tax went into effect, and gifts of cooking oil increased after the implementation of the tax.
(D) After the tax was imposed., Selean merchants began selling cooking oil in larger jars than before.
(E) Few Selean households began to produce their own cooking oil after the tax was imposed.

Questions 5 and 6 are based on the following reading passage.

The complications frequently accompanying diabetes, such as impairment of vision and of kidney function, are now thought to result from the lack of continuous control of blood glucose concentrations. The healthy pancreas, in response to increases in blood glucose concentration, releases small quantities of insulin throughout the day and thereby maintains the concentration within physiological limits (normoglycemia). But the diabetic generally receives only one large dose daily. The diabetic's blood glucose concentration can thus fluctuate greatly during the interval between doses, and it has been suggested that the complications result from the periods of high concentrations of blood glucose (hyperglycemia). Many investigators thus believe that restoration of normoglycemia might halt the progression of such complications and perhaps even reverse them.

For the following question, consider each of the choices separately and select all that apply

5. The author provides information that would answer which of the following questions?

Ⅰ What is hyperglycemia?
Ⅱ What is one cause of hyperglycemia?
Ⅲ What are some of the organs that can be adversely affected by hyperglycemia?

6. According to the passage, widely spaced doses of insulin can cause.
(A) reversal of normal kidney function
(B) delay in the onset of diabetes
(C) radical changes in the concentration of blood glucose
(D) restoration of normoglyccmia
(E) marked variations in the islets of Langerhans

Questions 7 to 9 are based on the following reading passage.

The success of fluoride in combating dental decay is well established and, without a doubt, socially beneficial. However, fluoride's toxic properties have been known for a century. In humans excessive intake (for adults, over 4 milligrams per day) over many years can lead to skeletal fluorosis, a well-defined skeletal disorder, and in some plant species, fluoride is more toxic than ozone, sulfur dioxide, or pesticides.

Some important questions remain. For example, the precise lower limit at which the fluoride content of bone becomes toxic is still undetermined. And while fluoride intake from water and air can be evaluated relatively easily, it is much harder to estimate how much a given population ingests from foodstuffs because of the wide variations in individual eating habits and in fluoride concentrations in foodstuffs.

7. The passage suggests that it would be easier to calculate fluoride intake from food if
   - Ⓐ adequate diets were available for most people.
   - Ⓑ individual eating habits were more uniform
   - Ⓒ the fluoride content of food was more varied
   - Ⓓ more people were aware of the fluoride content of food
   - Ⓔ methods for measuring the fluoride content of food were more generally agreed on

8. One function of the second paragraph of the passage is to
   - Ⓐ raise doubts about fluoride's toxicity
   - Ⓑ introduce the issue of fluoride's toxicity
   - Ⓒ differentiate a toxic from a nontoxic amount of fluoride
   - Ⓓ indicate that necessary knowledge of fluoride remains incomplete
   - Ⓔ discuss the foodstuffs that are most likely to contain significant concentrations of fluoride

For the following question, consider each of the choices separately and select all that apply

9.The passage suggests which of the following about the effect of fluoride on humans?

- Ⓐ The effect of fluoride intake from water and air is relatively difficult to monitor.
- Ⓑ An intake of 4 milligrams over a long period of time usually leads to a skeletal disorder in humans.
- Ⓒ An intake of slightly more than 4 milligrams for only a few months is not likely to be life-threatening.

Questions 10 to 13 are based on the following reading passage.

In February 1848 the people of Paris rose in revolt against the constitutional monarchy of Louis-Philippe. Despite the existence of excellent narrative accounts, the February Days, as this revolt is called, have been largely ignored by social historians of the past two decades. For each of the three other major insurrections in nineteenth-century Paris—July 1830, June 1848, and May 1871----there exists at least a sketch of participants' backgrounds and an analysis, more or less rigorous, of the reasons for the occurrence of the uprisings. Only in the case of the February Revolution do we lack a useful description of participants that might characterize it in the light of what social history has taught us about the process of revolutionary mobilization.

Two reasons for this relative neglect seem obvious. First, the insurrection of February has been overshadowed by that of June. The February Revolution overthrew a regime, to be sure, but met with so little resistance that it failed to generate any real sense of historical drama. Its successor, on the other hand, appeared to pit key socioeconomic groups in a life-or-death struggle and was widely seen by contemporary observers as marking a historical departure. Through their interpretations, which exert a continuing influence on our understanding of the revolutionary process, the impact of the events of June has been magnified, while, as an unintended consequence, the significance of the February insurrection has been diminished. Second, like other "successful" insurrections, the events of February failed to generate the most desirable kinds of historical records. Although the June insurrection of 1848 and the Paris Commune of 1871 would be considered watersheds of nineteenth-century French history by any standard, they also present the social historian with a signal advantage: these failed insurrections created a mass of invaluable documentation as a by-product of authorities' efforts to search out and punish the rebels.

Quite different is the outcome of successful insurrections like those of July 1830 and February 1848. Experiences are retold, but participants typically resume their daily routines without ever recording their activities. Those who played salient roles may become the objects of highly embellished verbal accounts or in rare cases, of celebratory articles in contemporary periodicals. And it is true that the publicly acknowledged leaders of an uprising frequently write memoirs. However, such documents are likely to be highly unreliable, unrepresentative, and unsystematically preserved, especially when compared to the detailed judicial dossiers prepared for everyone arrested following a failed insurrection. As a consequence, it may prove difficult or impossible to establish for a successful revolution a comprehensive and trustworthy picture of those who participated, or to answer even the most basic questions one might pose concerning the social origins of the insurgents.

For the following question, consider each of the choices separately and select all that apply

10. According to the passage, a useful description of participants"(lines 11-12) exists for which of the following insurrections of nineteenth-century France?

Ⓐ The July insurrection of 1830
Ⓑ The February Revolution of 1848
Ⓒ The May insurrection of 1871

11. Which of the following best describes the organization of the second paragraph?

(A) The thesis of the passage is stated and supporting evidence systematically presented.
(B) Two views regarding the thesis presented in the first paragraph are compared and contrasted
(C) Evidence refuting the thesis presented in the first paragraph is systematically presented.
(D) The thesis presented in the first paragraph is systematically supported.
(E) The thesis presented in the first paragraph is further defined and a conclusion drawn.

12. Which of the following can be inferred about the "detailed judicial dossiers" referred to in line 50?

(A) Information contained in the dossiers sheds light on the social origins of a revolution's participants.
(B) The dossiers closely resemble the narratives written by the revolution's leaders in their personal memoirs.
(C) The information that such dossiers contain is untrustworthy and unrepresentative of a revolution's participants.
(D) Social historians prefer to avoid such dossiers whenever possible because they are excessively detailed.
(E) The February Revolution of 1848 produced more of these dossiers than did the June insurrection.

13. Which of the following is the most logical objection to the claim made (lines 38-39) ?

(A) The February Revolution of 1848 is much less significant than the July insurrection of 1830.
(B) The backgrounds and motivations of participants in the July insurrection of 1830 have been identified, however cursorily.
(C) Even less is known about the July insurrection of 1830 than about the February Revolution of 1848.
(D) Historical records made during the July insurrection of 1830 are less reliable than those made during the May insurrection of 1871.
(E) The importance of the July insurrection of 1830 has been magnified at the expense of the significance of the February Revolution of 1848.

Exercise 16

Questions 1 to 3 are based on the following reading passage.

One advantage of breeding African bees with other bee types (Africanization) may be resistance to the parasitic mite *Varroa jacobsoni*, a major threat to modern beekeeping. In parts of Europe, this mite is devastating honeybees and killing many colonies despite preventive measures by beekeepers. But in Brazil *Varroa jacobsoni* has been present in Africanized bees since 1972 without the loss of a single colony, even though beekeepers there undertook no preventive measures. The mites lay eggs within the brood cells of immature bees, and developing mites feed on the hemolymph (blood) of bee pupae. But fewer mites reproduce in Africanized bees than in European bees. Some researchers point out that this resistance may be related to the Africanized worker bee's shorter development period, which prevents some mites from reaching maturity. Recently the mite has become a serious problem in colonies of European bees in North America. Africanization of these bees may be the best safeguard against this parasite.

For the following question, consider each of the choices separately and select all that apply

1. The author cites all of the following as evidence that Africanized bees' resistance to *Varroa jacobsoni* is superior to that of European bees:

Ⓐ *Varroa jacobsoni* is killing many bee colonies in Europe.

Ⓑ Beekeepers in Brazil have not used preventive measures to protect their colonies.

Ⓒ At least some European bee colonies have been saved by preventive measures.

2. According to the passage, research suggests that one possible reason the Africanized bees in Brazil have successfully resisted *Varroa jacobsoni* is that

(A) the life cycle of the Africanized bee may limit the *Varroa jacobsoni* mite's opportunity to reach full development

(B) the Africanized bees may have had an opportunity to develop a chemical resistance to *Varroa jacobsoni*

(C) the location of bee colonies in Brazil may provide a natural deterrent to *Varroa jacobsoni*

(D) *Varroa jacobsoni* may be relatively new to Brazil and may not have had time to become widespread

(E) beekeepers may have developed effective control techniques for *Varroa jacobsoni*

3. The author's argument regarding the resistance of Africanized bees to *Varroa jacobsoni* would be most weakened if which of the following were true?

Ⓐ The bees in Brazil were resistant before being Africanized.

Ⓑ The number of bee colonies in North American increased dramatically whereas the number in Brazil remained unchanged.

Ⓒ Mites found in European bees reproduce at a faster rate than mites of identical species found in the bees in Brazil.

Ⓓ Africanized bees retain many of the characteristics of European bees.

Ⓔ Bee colonies in Europe continue to produce greater quantities of honey than do those in Brazil.

Questions 4 and 5 are based on the following reading passage.

Innovative as it is, Luis Valdez' *acto* owes much to the theater traditions or other periods and regions. Like early Spanish American religious dramas, secular folk dramas, and the Mexican *carpas* of a somewhat later period, *actos* are usually performed outdoors by traveling groups of players or by local theater groups. The improvised comic satire of the *actos* is often attributed to Valdez' study of the Italian *commedia dell' arte* of the sixteenth century, although some critics see it as a direct reflection of the comic and improvisational qualities of the more contemporary and local *carpas* of Mexican theater. The Italian influence is likely, whatever Valdez' immediate source: the Mexican *carpas* themselves are said to have originated from the theater pieces of a sixteenth-century Spanish writer inspired by encounters with Italian *commedia dell'arte* troupes on tour in Spain.

4. Which of the following best describes the author's evaluation of the views of the critics?
   (A) Their views, if correct, do not preclude the existence of an Italian influence on the *acto*.
   (B) Their views are unlikely to be correct, given the differences existing between Mexican and Mexican American theater.
   (C) Their views concerning the Mexican *carpa* are essentially correct, but they lack familiarity with the *acto.*
   (D) Their views are probably more correct than the views of those who have attributed the comic and improvisational elements of the *acto* to earlier sources.
   (E) Their views betray a lack of familiarity with the *commedia dell'arte*.

5. Which of the following, if true, most strengthens the author's argument concerning the debt of the *acto* to the theater traditions of other periods and regions?
   (A) Many popular forms of theater rely heavily on improvisation.
   (B) Plays resembling the *acto* in structure were written in the 1970's by West African playwrights who are interested in dramatizing the richness of their own cultures.
   (C) The use of masks has, at one time or another, been characteristic of the theater traditions of almost all cultures, even those most isolated from outside influences.
   (D) During a strike, it is common for union members to present musical skits dramatizing the values of solidarity and resistance.
   (E) Before 1965 Luis Valdez had attended many performances of traditional Mexican theater groups touring the western United States.

Questions 6 to 9 are based on the following reading passage.

Although recent years have seen substantial reductions in noxious pollutants from individual motor vehicles, the number of such vehicles has been steadily increasing. Consequently, more than 100 cities in the United States still have levels of carbon monoxide, particulate matter, and ozone (generated by photochemical, reactions with hydrocarbons from vehicle exhaust) that exceed legally established limits. There is a growing, realization that the only effective way to achieve, further reductions in vehicle emissions—short of a massive shift away from the private automobile—is to replace conventional diesel fuel and gasoline with cleaner-burning fuels such as compressed natural gas, liquefied petroleum gas, ethanol, or methanol.

All of these alternatives are carbon- based fuels whose molecules are smaller and simpler than those of gasoline. These molecules burn more cleanly than gasoline, in part because they have fewer, if any , carbon-carbon bonds, and the hydrocarbons they do emit are less likely to generate ozone. The combustion of larger molecules, which have multiple carbon-carbon bonds, involves a more complex series of reactions. These reactions increase the probability of incomplete combustion and are more likely to release uncombusted and photochemically active hydrocarbon compounds into the atmosphere. On the other hand, alternative fuels do have drawbacks. Compressed natural gas would require that vehicles have a set of heavy fuel tanks—a serious liability in terms of performance and fuel efficiency---- and liquefied petroleum gas faces fundamental limits on supply.

Ethanol and methanol, on the other hand, have important advantages over other carbon-based alternative fuels: they have a higher energy content per volume and would require minimal changes in the existing network for distributing motor fuel. Ethanol is commonly used as a gasoline supplement, but it is currently about twice as expensive as methanol, the low cost of which is one of its attractive features. Methanol's most attractive feature, however, is that it can reduce by about 90 percent the vehicle emissions that form ozone, the most serious urban air pollutant.

Like any alternative fuel, methanol has its critics, Yet much of the criticism is based on the use of "gasoline clone" vehicles that do not incorporate even the simplest design improvements that are made possible with the use of methanol. It is true, for example, that a given volume of methanol provides only about one-half of the energy that gasoline and diesel fuel do; other things being equal, the fuel tank would have to be somewhat larger and heavier. However, since methanol- fueled vehicles could be designed to be much more efficient than "gasoline clone" vehicles fueled with methanol, they would need comparatively less fuel. Vehicles incorporating only the simplest of the engine improvements that methanol makes feasible would still contribute to an immediate lessening of urban air pollution.

6.According to the passage, incomplete combustion is more likely to occur with gasoline than with an alternative fuel because

(A) the combustion of gasoline releases photo-chemically active hydrocarbons

(B) the combustion of gasoline involves an intricate series of reactions

(C) gasoline molecules have a simple molecular structure

(D) gasoline is composed of small molecules.

(E) gasoline is a carbon-based fuel

7.The passage suggests which of the following about air pollution?

(A) Further attempts to reduce emissions from gasoline-fueled vehicles will not help lower urban air-pollution levels.

(B) Attempts to reduce the pollutants that an individual gasoline-fueled vehicle emits have been largely unsuccessful.

(C) Few serious attempts have been made to reduce the amount of pollutants emitted by gasoline-fueled vehicles.

(D) Pollutants emitted by gasoline-fueled vehicles are not the most critical source of urban air pollution.

(E) Reductions in pollutants emitted by individual vehicles have been offset by increases in pollution from sources other than gasoline-fueled vehicles.

8.which of the following most closely parallels the situation described in the first sentence of the passage?

(A) Although a town reduces its public services in order to avoid a tax increase, the town's tax rate exceeds that of other towns in the surrounding area.

(B) Although a state passes strict laws to limit the type of toxic material that can be disposed of in public landfills, illegal dumping continues to increase.

(C) Although a town's citizens reduce their individual use of water, the town's water supplies continue to dwindle because of a steady increase in the total population of the town.

(D) Although a country attempts to increase the sale of domestic goods by adding a tax to the price of imported goods, the sale of imported goods within the country continues to increase.

(E) Although a country reduces the speed limit on its national highways, the number of fatalities caused by automobile accidents continues to increase.

9. It can be inferred from the passage that a vehicle specifically designed to use methanol for fuel would

(A) be somewhat lighter in total body weight than a conventional vehicle fueled with gasoline

(B) be more expensive to operate than a conventional vehicle fueled with gasoline

(C) have a larger and more powerful engine than a conventional vehicle fueled with gasoline

(D) have a larger and heavier fuel tank than a "gasoline clone" vehicle fueled with methanol

(E) average more miles per gallon than a "gasoline clone" vehicle fueled with methanol

Questions 10 and 11 are based on the following reading passage.

If people are regarded only as machines guided by logic, as they were by some "scientistic" thinkers, rhetoric is likely to be held in low regard; for the most obvious truth about rhetoric is that it speaks to the whole person. It presents its arguments first to the person as a rational being. Logical argument is the plot, as it were, of any speech or essay that is respectfully intended to persuade people. Yet it is a characterizing feature of rhetoric that it goes beyond this and appeals to the parts of our nature that are involved in feeling, desiring, acting, and suffering. It recalls relevant instances of the emotional reactions of people to circumstances-real or fictional-that are similar to our own circumstances.

10. The passage suggests that the disparagement of rhetoric by some people can be traced to their

(A) reaction against science
(B) lack of training in logic
(C) desire to persuade people as completely as possible
(D) misunderstanding of the use of the term "scientistic"
(E) view of human motivation

For the following question, consider each of the choices separately and select all that apply

11. Which of the following states the author's main point about logical argument?

Ⓐ It is a sterile, abstract discipline, of little use in real life.
Ⓑ It is an essential element of persuasive discourse, but only one such element.
Ⓒ It is essential to persuasive discourse because it deals with universal truths.

Questions 12 to 13 are based on the following reading passage.

When a molten metal or metallic alloy is cooled to a solid, a crystalline structure is formed that depends on the particular alloy composition. In contrast, molten
Line nonmetallic glass-forming materials, when cooled, do not
5 assume a crystalline structure, but instead retain a structure somewhat like that of the liquid--an amorphous structure. At room temperature, the natural long-term tendency for both types of materials is to assume the crystalline structure. The difference between the two is in
10 the kinetics or rate of formation of the crystalline structure, which is controlled by factors such as the nature of the chemical bonding and the ease with which atoms move relative to each other. Thus, in metals, the kinetics favors rapid formation of a crystal line structure, whereas
15 in nonmetallic glasses the rate of formation is so slow that almost any cooling rate is sufficient to result in an amorphous structure. For glassy metals to be formed, the molten metal must be cooled extremely rapidly so that crystallization is suppressed.

12. The author implies that the rate at which the molten materials discussed in the passage are cooled is a determinant of the
    (A) chemical composition of the resulting solids
    (B) strength of the chemical bonds that are formed
    (C) kinetics of the materials' crystalline structure
    (D) structure the materials assume
    (E) stability of the materials' crystalline structure

13. It can be inferred from the passage that, theoretically, molten nonmetallic glasses assume a crystalline structure rather than an amorphous structure only if they are cooled
    (A) very evenly, regardless of the rate
    (B) rapidly, followed by gentle heating
    (C) extremely slowly
    (D) to room temperature
    (E) to extremely low temperatures

Exercise 17

Volcanic rock that forms as fluid lava chills rapidly is called pillow lava. This rapid chilling occurs when lava erupts directly into water (or beneath ice) or when it flows across a shoreline and into a body of water. While the term "pillow lava" suggests a definite shape, in fact geologists disagree. Some geologists argue that pillow lava is characterized by discrete, ellipsoidal masses. Others describe pillow lava as a tangled mass of cylindrical, interconnected flow lobes. Much of this controversy probably results from unwarranted extrapolations of the original configuration of pillow flows from two-dimensional cross sections of eroded pillows in land outcroppings. Virtually any cross section cut through a tangled mass of interconnected flow lobes would give the appearance of a pile of discrete ellipsoidal masses. Adequate three-dimensional images of intact pillows are essential for defining the true geometry of pillowed flows and thus ascertaining their mode of origin. Indeed, the term "pillow," itself suggestive of discrete masses, is probably a misnomer.

(165 words)

1. In the passage, the author is primarily interested in
   (A) analyzing the source of a scientific controversy
   (B) criticizing some geologists' methodology
   (C) pointing out the flaws in a geological study
   (D) proposing a new theory to explain existing scientific evidence
   (E) describing a physical phenomenon

For the following question, consider each of the choices separately and select all that apply

2. The author of the passage would most probably agree that the geologists mentioned in the fourth sentence have made which of the following errors in reasoning?

Ⓐ Generalized unjustifiably from available evidence.
Ⓑ Deliberately ignored existing counterevidence.
Ⓒ Repeatedly failed to take new evidence into account.

3. The author implies that the "controversy" might be resolved if
   (A) geologists did not persist in using the term "pillow"
   (B) geologists did not rely on potentially misleading information
   (C) geologists were more willing to confer directly with one another
   (D) two-dimensional cross sections of eroded pillows were available
   (E) existing pillows in land outcroppings were not so badly eroded

The great variety of plants in Hawaii is a result of the long-distance dispersal of seeds. There is some dispute about the method of transport involved. Some biologists argue that ocean and air currents are responsible for the transport of plant seeds to Hawaii. Yet the results of flotation experiments and the low temperatures of air currents cast doubt on these hypotheses. More probable is bird transport, either externally, by accidental attachment of the seeds to feathers, or internally, by the swallowing of fruit and subsequent excretion of the seeds. While it is likely that fewer varieties of plant seeds have reached Hawaii externally than internally, more varieties are known to be adapted to external than to internal transport.

(119 words)

4. The author mentions the results of flotation experiments on plant seeds most probably in order to

(A) support the claim that the distribution of plants in Hawaii is the result of the long-distance dispersal of seeds

(B) lend credibility to the thesis that air currents provide a method of transport for plant seeds to Hawaii

(C) suggest that the long-distance dispersal of seeds is a process that requires long periods of time

(D) challenge the claim that ocean currents are responsible for the transport of plant seeds to Hawaii

(E) refute the claim that Hawaiian flora evolved independently from flora in other parts of the world

Many objects in daily use have clearly been influenced by science, but their form and function, their dimensions and appearance, were determined by technologists, artisans, designers, inventors, and engineers—using non-scientific modes of thought. Many features and qualities of the objects that a technologist thinks about cannot be reduced to unambiguous verbal descriptions; they are dealt with in the mind by a visual, nonverbal process. In the development of Western technology, it has been non-verbal thinking, by and large, that has fixed the outlines and filled in the details of our material surroundings. Pyramids, cathedrals, and rockets exist not because of geometry or thermodynamics, but because they were first a picture in the minds of those who built them.

The creative shaping process of a technologist's mind can be seen in nearly every artifact that exists. For example, in designing a diesel engine, a technologist might impress individual ways of nonverbal thinking on the machine by continually using an intuitive sense of rightness and fitness. What would be the shape of the combustion chamber? Where should the valves be placed? Should it have a long or short piston? Such questions have a range of answers that are supplied by experience, by physical requirements, by limitations of available space, and not least by a sense of form. Some decisions, such as wall thickness and pin diameter, may depend on scientific calculations, but the nonscientific component of design remains primary.

Design courses, then, should be an essential element in engineering curricula. Nonverbal thinking, a central mechanism in engineering design, involves perceptions, the stock-in-trade of the artist, not the scientist. Because perceptive processes are not assumed to entail "hard thinking," nonverbal thought is sometimes seen as a primitive stage in the development of cognitive processes and inferior to verbal or mathematical thought. But it is paradoxical that when the staff of the *Historic American Engineering Record* wished to have drawings made of machines and isometric views of industrial processes for its historical record of American engineering, the only college students with the requisite abilities were not engineering students, but rather students attending architectural schools.

If courses in design, which in a strongly analytical engineering curriculum provide the background required for practical problem-solving, are not provided, we can expect to encounter silly but costly errors occurring in advanced engineering systems. For example, early models of high-speed railroad cars loaded with sophisticated controls were unable to operate in a snowstorm because a fan sucked snow into the electrical system. Absurd random failures that plague automatic control systems are not merely trivial aberrations; they are a reflection of the chaos that results when design is assumed to be primarily a problem in mathematics.

5. In the passage, the author is primarily concerned with

(A) identifying the kinds of thinking that are used by technologists

(B) stressing the importance of nonverbal thinking in engineering design

(C) proposing a new role for nonscientific thinking in the development of technology

(D) contrasting the goals of engineers with those of technologists

(E) criticizing engineering schools for emphasizing science in engineering curricula

6. Which of the following statements would best serve as an introduction to the passage?

(A) The assumption that the knowledge incorporated in technological developments must be derived from science ignores the many non-scientific decisions made by technologists.

(B) Analytical thought is no longer a vital component in the success of technological development.

(C) As knowledge of technology has increased, the tendency has been to lose sight of the important role played by scientific thought in making decisions about form, arrangement, and texture.

(D) A movement in engineering colleges toward a technician's degree reflects a demand for graduates who have the nonverbal reasoning ability that was once common among engineers.

(E) A technologist thinking about a machine, reasoning through the successive steps in a dynamic process, can actually turn the machine over mentally.

7. The author calls the predicament faced by the *Historic American Engineering Record* "paradoxical" (in the third paragraph) most probably because

(A) the publication needed drawings that its own staff could not make

(B) architectural schools offered but did not require engineering design courses for their students

(C) college students were qualified to make the drawings while practicing engineers were not

(D) the drawings needed were so complicated that even students in architectural schools had difficulty making them

(E) engineering students were not trained to make the type of drawings needed to record the development of their own discipline

8. The author uses the example of the early models of high-speed railroad cars primarily to

(A) weaken the argument that modern engineering systems have major defects because of an absence of design courses in engineering curricula

(B) support the thesis that the number of errors in modern engineering systems is likely to increase

(C) illustrate the idea that courses in design are the most effective means for reducing the cost of designing engineering systems

(D) support the contention that a lack of attention to the nonscientific aspects of design results in poor conceptualization by engineers

(E) weaken the proposition that mathematics is a necessary part of the study of design

Recent scholarship has strongly suggested that the aspects of early New England culture that seem to have been most distinctly Puritan, such as the strong religious orientation and the communal impulse, were not typical of New England as a whole, but were largely confined to the two colonies of Massachusetts and Connecticut. Thus, what in contrast to the Puritan colonies appears to Professor Davis to be peculiarly Southern was not only more typically English than the cultural patterns exhibited by Puritan Massachusetts and Connecticut, but also almost certainly characteristic of most other early modern British colonies from Barbados north to Rhode Island and New Hampshire. Within the larger framework of American colonial life, then, not the Southern but the Puritan colonies appear to have been distinctive, and even they seem to have been rapidly assimilating to the dominant cultural patterns by the late Colonial period.

(145 words)

9. Which of the following statements could most logically follow the last sentence of the passage?

(A) Thus, had more attention been paid to the evidence, Davis would not have been tempted to argue that the culture of the South diverged greatly from Puritan culture in the seventeenth century.

(B) Thus, convergence, not divergence, seems to have characterized the cultural development of the American colonies in the eighteenth century.

(C) Thus, without the cultural diversity represented by the America South, the culture of colonial America would certainly have been homogeneous in nature.

(D) Thus, the contribution of Southern colonials to American culture was certainly overshadowed by that of the Puritans.

(E) Thus, the culture of America during the Colonial period was far more sensitive to outside influences than historians are accustomed to acknowledge.

Housing construction materials give off distinctive sounds when exposed to high temperatures. Acoustic sensors accurately detect such sounds and fire alarms incorporating acoustic sensors can provide an early warning of house fires, allowing inhabitants to escape before being overcome by smoke. Since smoke inhalation is the most common cause of fatalities in house fires, mandating acoustic-sensor- based alarms instead of smoke detectors will eliminate house fire as a major cause of death.

10. Which of the following, if true, most weakens the argument given?

(A) The present high cost of acoustic-sensor-based alarm systems will decline if their use becomes widespread.

(B) When fully ignited, many materials used in housing construction give off sounds that are audible even from several hundred yards away.

(C) Many fires begin in cushions or in mattresses, producing large amounts of smoke without giving off any sounds.

(D) Two or more acoustic-sensor-based alarms would be needed to provide adequate protection in some larger houses.

(E) Smoke detectors have been responsible for saving many lives since their use became widespread.

Exercise 18

Theorists are divided concerning the origin of the Moon. Some hypothesize that the Moon was formed in the same way as were the planets in the inner solar system (Mercury, Venus, Mars, and Earth)—from planet-forming materials in the presolar nebula. But, unlike the cores of the inner planets, the Moon's core contains little or no iron, while the typical planet-forming materials were quite rich in iron. Other theorists propose that the Moon was ripped out of the Earth's rocky mantle by the Earth's collision with another large celestial body after much of the Earth's iron fell to its core. One problem with the collision hypothesis is the question of how a satellite formed in this way could have settled into the nearly circular orbit that the Moon has today. Fortunately, the collision hypothesis is testable. If it is true, the mantle rocks of the Moon and the Earth should be the same geochemically.

(155 words)

For the following question, consider each of the choices separately and select all that apply

1. According to the passage, Mars and the Earth are similar in which of the following ways?

A Their satellites were formed by collisions with other celestial bodies.
B Their cores contain iron.
C They were formed from the presolar nebula.

2. The author implies that a nearly circular orbit is unlikely for a satellite that
(A) circles one of the inner planets
(B) is deficient in iron
(C) is different from its planet geochemically
(D) was formed by a collision between two celestial bodies
(E) was formed out of the planet-forming materials in the presolar nebula

3. Which of the following, if true, would be most likely to make it difficult to verify the collision hypothesis in the manner suggested by the author?
(A) The Moon's core and mantle rock are almost inactive geologically.
(B) The mantle rock of the Earth has changed in composition since the formation of the Moon, while the mantle rock of the Moon has remained chemically inert.
(C) Much of the Earth's iron fell to the Earth's core long before the formation of the Moon, after which the Earth's mantle rock remained unchanged.
(D) Certain of the Earth's elements, such as platinum, gold, and iridium, followed iron to the Earth's core.
(E) The mantle rock of the Moon contains elements such as platinum, gold, and iridium.

At the Shadybrook dog kennel, all the adult animals were given a new medication designed to reduce a dog's risk of contracting a certain common infection. Several days after the medication was administered, most of the puppies of these dogs had elevated temperatures. Since raised body temperature is a side effect of this medication, the kennel owner hypothesized that the puppies' elevated temperatures resulted from the medication's being passed to them through their mothers' milk.

4. Which of the following, if true, provides the most support for the kennel owner's hypothesis?

(A) Some puppies have been given the new medication directly but have not suffered elevated temperatures as a side effect.

(B) The new medication has been well received by dog breeders as a safe and effective way of preventing the spread of certain common canine infections.

(C) None of the four puppies in the kennel who had been bottle-fed with formula had elevated temperatures.

(D) an elevated temperature is a side effect of a number of medications for dogs other than the new medication administered at the kennel.

(E) Elevated temperatures such as those suffered by most of the puppies in the kennel rarely have serious long-term effects on a puppy's health.

A long-held view of the history of the English colonies that became the United States has been that England's policy toward these colonies before 1763 was dictated by commercial interests and that a change to a more imperial policy, dominated by expansionist militarist objectives, generated the tensions that ultimately led to the American Revolution. In a recent study, Stephen Saunders Webb has presented a formidable challenge to this view. According to Webb, England already had a military imperial policy for more than a century before the American Revolution. He sees Charles II, the English monarch between 1660 and 1685, as the proper successor of the Tudor monarchs of the sixteenth century and of Oliver Cromwell, all of whom were bent on extending centralized executive power over England's possessions through the use of what Webb calls "garrison government."Garrison government allowed the colonists a legislative assembly but real authority, in Webb's view, belonged to the colonial governor, who was appointed by the king and supported by the "garrison," that is, by the local contingent of English troops under the colonial governor's command.

According to Webb, the purpose of garrison government was to provide military support for a royal policy designed to limit the power of the upper classes in the American colonies. Webb argues that the colonial legislative assemblies represented the interests not of the common people but of the colonial upper classes, a coalition of merchants and nobility who favored self-rule and sought to elevate legislative authority at the expense of the executive. It was, according to Webb, the colonial governors who favored the small farmer, opposed the plantation system, and tried through taxation to break up large holdings of land. Backed by the military presence of the garrison, these governors tried to prevent the gentry and merchants, allied in the colonial assemblies, from transforming colonial America into a capitalistic oligarchy.

Webb's study illuminates the political alignments that existed in the colonies in the century prior to the American Revolution, but his view of the crown's use of the military as an instrument of colonial policy is not entirely convincing. England during the seventeenth century was not noted for its military achievements. Cromwell did mount England's most ambitious overseas military expedition in more than a century, but it proved to be an utter failure. Under Charles II, the English army was too small to be a major instrument of government. Not until the war France in 1697 did William III persuade Parliament to create a professional standing army, and Parliaments price for doing so was to keep the army under tight legislative control. While it may be true that the crown attempted to curtail the power of the colonial upper classes, it is hard to imagine how the English army during the seventeenth century could have provided significant military support for such a policy.

(473 words)

5. The passage can best be described as a
   (A) survey of the inadequacies of a conventional viewpoint
   (B) reconciliation of opposing points of view
   (C) summary and evaluation of a recent study
   (D) defense of a new thesis from anticipated objections
   (E) review of the subtle distinctions between apparently similar views

6. The passage suggests that the long-standing view referred to in the first paragraph argued that
   (A) the colonial governors were sympathetic to the demands of the common people
   (B) Charles II was a pivotal figure in the shift of English monarchs toward a more imperial policy in their governorship of the American colonies.
   (C) the American Revolution was generated largely out of a conflict between the colonial upper classes and an alliance of merchants and small farmers
   (D) the military did not play a major role as an instrument of colonial policy until 1763
   (E) the colonial legislative assemblies in the colonies had little influence over the colonial governors

7. According to the passage, Webb views Charles II as the "proper successor" (in the first paragraph) of the Tudor monarchs and Cromwell because Charles II
   (A) used colonial tax revenues to fund overseas military expeditions
   (B) used the military to extend executive power over the English colonies
   (C) wished to transform the American colonies into capitalistic oligarchies
   (D) resisted the English Parliament's efforts to exert control over the military
   (E) allowed the American colonists to use legislative assemblies as a forum for resolving grievances against the crown

For the following question, consider each of the choices separately and select all that apply

8. According to Webb's view of colonial history, which of the following was (were) true of the merchants and nobility mentioned in the second paragraph?
   A They were opposed to policies formulated by Charles II that would have transformed the colonies into capitalistic oligarchies.
   B They were opposed to attempts by the English crown to limit the power of the legislative assemblies.
   C They were united with small farmers in their opposition to the stationing of English troops in the colonies.

The social sciences are less likely than other intellectual enterprises to get credit for their accomplishments. Arguably, this is so because the theories and conceptual constructs of the social sciences are especially accessible: human intelligence apprehends truths about human affairs with particular facility.

This underappreciation of the social sciences contrasts oddly with what many see as their overutilization. Game theory is pressed into service in studies of shifting international alliances. Evaluation research is called upon to demonstrate successes or failures of social programs. Yet this rush into practical applications is itself quite understandable: public policy must continually be made, and policymakers rightly feel that even tentative findings and untested theories are better guides to decision-making than no findings and no theories at all.

(123 words)

9. The author confronts the claim that the social sciences are being overutilized with

(A) proof that overextensions of social science results are self-correcting
(B) evidence that some public policy is made without any recourse to social science findings or theories
(C) a long list of social science applications that are perfectly appropriate and extremely fruitful
(D) the argument that overutilization is by and large the exception rather than the rule
(E) the observation that this practice represents the lesser of two evils under existing circumstances

Zooplankton, tiny animals adapted to an existence in the ocean, have evolved clever mechanisms for obtaining their food, miniscule phytoplankton (plant plankton). A very specialized feeding adaptation in zooplankton is that of the tadpolelike appendicularian who lives in a walnut-sized (or smaller) balloon of mucus equipped with filters that capture and concentrate phytoplankton. The balloon, a transparent structure that varies in design according to the type of appendicularian inhabiting it, also protects the animal and helps to keep it afloat. Water containing phytoplankton is pumped by the appendicularian's muscular tail into the balloon's incurrent filters, passes through the feeding filter where the appendicularian sucks the food into its mouth, and then goes through an exit passage. Found in all the oceans of the world, including the Arctic Ocean, appendicularians tend to remain near the water's surface where the density of phytoplankton is greatest.

(143 words)

10. It can be inferred from the passage that which of the following is true of appendicularians?

(A) They are exclusively carnivorous.
(B) They have more than one method of obtaining food.
(C) They can tolerate frigid water.
(D) They can disguise themselves by secreting mucus.
(E) They are more sensitive to light than are other zooplankton.

Exercise 19

The human body responds to a viral infection by producing antibodies: complex, highly specific proteins that selectively bind to foreign molecules such as viruses. An antibody can either interfere with a virus's ability to bind to a cell, or can prevent it from releasing its nucleic acid. Unfortunately, the common cold, produced most often by rhinoviruses, is intractable to antiviral defense. Humans have difficulty resisting colds because rhinoviruses are so diverse, including at least 100 strains. The strains differ most in the molecular structure of the proteins in their capsids. Since disease-fighting antibodies bind to the capsid, an antibody developed to protect against one rhinovirus strain is useless against other strains. Different antibodies must be produced for each strain.

A defense against rhinoviruses might nonetheless succeed by exploiting hidden similarities among the rhinovirus strains. For example, most rhinovirus strains bind to the same kind of molecule (delta-receptors) on a cell's surface when they attack human cells. Colonno, taking advantage of these common receptors, devised a strategy for blocking the attachment of rhinoviruses to their appropriate receptors. Rather than fruitlessly searching for an antibody that would bind to all rhinoviruses, Colonno realized that an antibody binding to the common receptors of a human cell would prevent rhinoviruses from initiating an infection. Because human cells normally do not develop antibodies to components of their own cells, Colonno injected human cells into mice, which did produce an antibody to the common receptor. In isolated human cells, this antibody proved to be extraordinarily effective at thwarting the rhinovirus. Moreover, when the antibody was given to chimpanzees, it inhibited rhinoviral growth, and in humans it lessened both the severity and duration of cold symptoms.

Another possible defense against rhinoviruses was proposed by Rossman, who described rhinoviruses' detailed molecular structure. Rossman showed that protein sequences common to all rhinovirus strains lie at the base of a deep "canyon" scoring each face of the capsid. The narrow opening of this canyon possibly prevents the relatively large antibody molecules from binding to the common sequence, but smaller molecules might reach it. Among these smaller, nonantibody molecules, some might bind to the common sequence, lock the nucleic acid in its coat, and thereby prevent the virus from reproducing.

(369 words)

1. It can be inferred from the passage that a cell lacking delta-receptors will be
   (A) unable to prevent the rhinoviral nucleic acid from shedding its capsid
   (B) defenseless against most strains of rhinovirus
   (C) unable to release the viral progeny it develops after infection
   (D) protected from new infections by antibodies to the rhinovirus
   (E) resistant to infection by most strains of rhinovirus

2. It can be inferred from the passage that the purpose of Colonno's experiments was to determine whether
   (A) chimpanzees and humans can both be infected by rhinoviruses
   (B) chimpanzees can produce antibodies to human cell-surface receptors
   (C) a rhinovirus' nucleic acid might be locked in its protein coat
   (D) binding antibodies to common receptors could produce a possible defense against rhinoviruses
   (E) rhinoviruses are vulnerable to human antibodies

3. According to the passage, Rossman's research suggests that
   (A) a defense against rhinoviruses might exploit structural similarities among the strains of rhinovirus
   (B) human cells normally do not develop antibodies to components of their own cells
   (C) the various strains of rhinovirus differ in their ability to bind to the surface of a host cell
   (D) rhinovirus versatility can work to the benefit of researchers trying to find a useful antibody
   (E) Colonno's research findings are probably invalid

4. According to the passage, in order for a given antibody to bind to a given rhinoviral capsid, which of the following must be true?
   (A) The capsid must have a deep "canyon" on each of its faces.
   (B) The antibody must be specific to the molecular structure of the particular capsid.
   (C) The capsid must separate from its nucleic acid before binding to an antibody.
   (D) The antibody must bind to a particular cell-surface receptor before it can bind to a rhinovirus.
   (E) The antibody must first enter a cell containing the particular rhinovirus.

5. Which of the following most logically completes the argument?

Alivia's government has approved funds for an electricity-generation project based on the construction of a pipeline that will carry water from Lake Cylus, in the mountains, to the much smaller Lake Tifele, in a nearby valley. The amount of electricity generated will be insufficient by itself to justify the project's cost, even if the price of imported oil-Alivia's primary source of electricity-increases sharply. Nonetheless, the pipeline project is worth its cost, because _____.

(A) the price of oil, once subject to frequent sharp increases, has fallen significantly and is now fairly stable

(B) the project could restore Lake Tifele, which is currently at risk of drying up and thus of being lost as a source of recreation income for Alivia

(C) the government of Alivia is currently on excellent terms with the governments of most of the countries from which it purchases oil

(D) it would cost less to generate electricity by moving water from Lake Cylus to lake Tifele than to do so by moving water from Lake Cylus to another valley lake

(E) Alivian officials do not expect that the amount of electricity used in Alivia will increase substantially within the next ten years

Students of United States history, seeking to identify the circumstances that encouraged the emergence of feminist movements, have thoroughly investigated the mid-nineteenth-century American economic and social conditions that affected the status of women. These historians, however, have analyzed less fully the development of specifically feminist ideas and activities during the same period. Furthermore, the ideological origins of feminism in the United States have been obscured because, even when historians did take into account those feminist ideas and activities occurring within the United States, they failed to recognize that feminism was then a truly international movement actually centered in Europe. American feminist activists who have been described as "solitary" and "individual theorists" were in reality connected to a movement—utopian socialism— which was already popularizing feminist ideas in Europe during the two decades that culminated in the first women's rights conference held at Seneca Falls, New York, in 1848.

(148 words)

6. It can be inferred that the author considers those historians who describe early feminists in the United States as "solitary" to be
   (A) insufficiently familiar with the international origins of nineteenth-century American feminist thought
   (B) overly concerned with the regional diversity of feminist ideas in the period before 1848
   (C) not focused narrowly enough in their geographical scope
   (D) insufficiently aware of the ideological consequences of the Seneca Falls conference
   (E) insufficiently concerned with the social conditions out of which feminism developed

7. According to the passage, which of the following is true of the Seneca Falls conference on women's rights?
   (A) It was primarily a product of nineteenth-century Saint-Simonian feminist thought.
   (B) It was the work of American activists who were independent of feminists abroad.
   (C) It was the culminating achievement of the utopian socialist movement.
   (D) It was a manifestation of an international movement for social change and feminism.
   (E) It was the final manifestation of the women's rights movement in the United States in the nineteenth century.

Researchers of the Pleistocene epoch have developed all sorts of more or less fanciful model schemes of how they would have arranged the Ice Age had they been in charge of events. For example, an early classification of Alpine glaciations suggested the existence there of four glaciations, named the Gunz, Mindel, Riss, and Wurm. This succession was based primarily on a series of deposits and events not directly related to glacial and interglacial periods, rather than on the more usual modern method of studying biological remains found in interglacial beds themselves interstratified within glacial deposits. Yet this succession was forced willy-nilly onto the glaciated parts of Northern Europe, with hopes of ultimately piecing them together to provide a complete Pleistocene succession. Eradication of the Alpine nomenclature is still proving a Herculean task.

(132 words)

8. According to the passage, one of the reasons for the deficiencies of the "early classification of Alpine glaciation" is that it was
   (A) derived from evidence that was only tangentially related to times of actual glaciation
   (B) based primarily on fossil remains rather than on actual living organisms
   (C) an abstract, imaginative scheme of how the period might have been structured
   (D) based on unmethodical examinations of randomly chosen glacial biological remains
   (E) derived from evidence that had been haphazardly gathered from glacial deposits and inaccurately evaluated

When speaking of Romare Bearden, one is tempted to say, "A great Black American artist." The subject matter of Bearden's collages is certainly Black. Portrayals of the folk of Mecklenburg County, North Carolina, whom he remembers from early childhood, of the jazz musicians and tenement roofs of his Harlem days, of Pittsburgh steelworkers, and his reconstruction of classical Greek myths in the guise of the ancient Black kingdom of Benin, attest to this. In natural harmony with this choice of subject matter are the social sensibilities of the artist, who remains active today with the Cinque Gallery in Manhattan, which he helped found and which is devoted to showing the work of minority artists. (114 words)

For the following question, consider each of the choices separately and select all that apply

9. According to the passage, all of the following are depicted in Bearden's collages

A workers in Pittsburgh's steel mills
B the jazz musicians of the Harlem Bearden used to know
C people Bearden knew as a child

Chris: Hundreds of traffic accidents annually are attributable to the poor condition of our city's streets. The streets must therefore be repaired to save lives.

Leslie: For less than the cost of those repairs, the city could improve its mass transit system and thus dramatically reduce traffic congestion, which contributes significantly to those traffic accidents. The city cannot afford to do both, so it should improve mass transit, because reduced traffic congestion has additional advantages.

10. Which of the following best describes the point at issue between Chris and Leslie?
(A) Whether a certain problem in fact exists
(B) How a certain problem came into being
(C) Who is responsible for addressing a certain problem
(D) Whether the city has sufficient financial resources to address a certain problem
(E) How the city can best address a certain problem

Exercise 20

Diamonds, an occasional component of rare igneous rocks called lamproites and kimberlites, have never been dated satisfactorily. However, some diamonds contain minute inclusions of silicate minerals, commonly olivine, pyroxene, and garnet. These minerals can be dated by radioactive decay techniques because of the very small quantities of radioactive trace elements they, in turn, contain. Usually, it is possible to conclude that the inclusions are older than their diamond hosts, but with little indication of the time interval involved. Sometimes, however, the crystal form of the silicate inclusions is observed to resemble more closely the internal structure of diamond than that of other silicate minerals. When present, the resemblance is regarded as compelling evidence that the diamonds and inclusions are truly cogenetic. (121 words)

1. The author implies that silicate inclusions were most often formed
   (A) with small diamonds inside of them
   (B) with trace elements derived from their host minerals
   (C) by the radioactive decay of rare igneous rocks
   (D) at an earlier period than were their host minerals
   (E) from the crystallization of rare igneous material

2. Select the sentence in the passage that indicates a way to determine the age of silicate minerals included in diamonds.

For some time scientists have believed that cholesterol plays a major role in heart disease because people with familial hypercholesterolemia, a genetic defect, have six to eight times the normal level of cholesterol in their blood and they invariably develop heart disease. These people lack cell-surface receptors for low-density lipoproteins (LDL's), which are the fundamental carriers of blood cholesterol to the body cells that use cholesterol. Without an adequate number of cell-surface receptors to remove LDL's from the blood, the cholesterol-carrying LDL's remain in the blood, increasing blood cholesterol levels. Scientists also noticed that people with familial hypercholesterolemia appear to produce more LDL's than normal individuals. How, scientists wondered, could a genetic mutation that causes a slow-down in the removal of LDL's from the blood also result in an increase in the synthesis of this cholesterol-carrying protein?

Since scientists could not experiment on human body tissue, their knowledge of familial hyper- cholesterolemia was severely limited. However, a breakthrough came in the laboratories of Yoshio Watanabe of Kobe University in Japan in 1980. Watanabe noticed that a male rabbit in his colony had ten times the normal concentration of cholesterol in its blood. By appropriate breeding, Watanabe obtained a strain of rabbits that had very high cholesterol levels. These rabbits spontaneously developed heart disease. To his surprise, Watanabe further found that the rabbits, like humans with familial hypercholesterolemia, lacked LDL receptors. Thus, scientists could study these Watanabe rabbits to gain a better understanding of familial hyper- cholesterolemia in humans

Prior to the breakthrough at Kobe University, it was known that LDL's are secreted from the liver in the form of a precursor, called very low-density lipoproteins (VLDL's), which carry triglycerides as well as relatively small amounts of cholesterol. The triglycerides are removed from the VLDL's by fatty and other tissues. What remains is a remnant particle that must be removed from the blood. What scientists learned by studying the Watanabe rabbits is that the removal of the VLDL remnant requires the LDL receptor. Normally, the majority of the VLDL remnants go to the liver where they bind to LDL receptors and are degraded. In the Watanabe rabbit, due to a lack of LDL receptors on liver cells, the VLDL remnants remain in the blood and are eventually converted to LDL's. The LDL receptors thus have a dual effect in controlling LDL levels. They are necessary to prevent oversynthesis of LDL's from VLDL remnants and they are necessary for the normal removal of LDL's from the blood. With this knowledge, scientists are now well on the way toward developing drugs that dramatically lower cholesterol levels in people afflicted with certain forms of familial hypercholesterolemia.

3. In the passage, the author is primarily concerned with
   (A) presenting a hypothesis and describing compelling evidence in support of it
   (B) raising a question and describing an important discovery that led to an answer
   (C) showing that a certain genetically caused disease can be treated effectively with drugs
   (D) explaining what causes the genetic mutation that leads to heart disease
   (E) discussing the importance of research on animals for the study of human disease

For the following question, consider each of the choices separately and select all that apply

4. The passage supplies information to answer which of the following questions EXCEPT?

A Which body cells are the primary users of cholesterol?
B How did scientists discover that LDL's are secreted from the liver in the form of a precursor?
C Where in the body are VLDL remnants degraded?

5. The passage implies that if the Watanabe rabbits had had as many LDL receptors on their livers as do normal rabbits, the Watanabe rabbits would have been
   (A) less likely than normal rabbits to develop heart disease
   (B) less likely than normal rabbits to develop high concentrations of cholesterol in their blood
   (C) less useful than they actually were to scientists in the study of familial hypercholesterolemia in humans
   (D) unable to secrete VLDL's from their livers
   (E) immune to drugs that lower cholesterol levels in people with certain forms of familial hypercholesterolemia

6. The passage implies that Watanabe rabbits differ from normal rabbits in which of the following ways?
   (A) Watanabe rabbits have more LDL receptors than do normal rabbits.
   (B) The blood of Watanabe rabbits contains more VLDL remnants than does the blood of normal rabbits.
   (C) Watanabe rabbits have fewer fatty tissues than do normal rabbits.
   (D) Watanabe rabbits secrete lower levels of VLDL's than do normal rabbits.
   (E) The blood of Watanabe rabbits contains fewer LDL's than does the blood of normal rabbits.

Discussion of the assimilation of Puerto Ricans in the United States has focused on two different factors: social standing and the loss of national culture, depending on whether the commentator is North American or Puerto Rican. Many North American social scientists consider Puerto Ricans as the most recent in a long line of ethnic entrants to occupy the lowest rung on the social ladder. Such a "socio-demographic" approach tends to regard assimilation as a benign process. In contrast, the "colonialist" approach of island-based writers tends to view assimilation as the forced loss of national culture in an unequal contest with imposed foreign values. There is, of course, a strong tradition of cultural accommodation among other Puerto Rican thinkers, like Eugenio Fernandez Mendez. But the Puerto Rican intellectuals who have written most about the assimilation process in the United States all advance cultural nationalist views, advocating the preservation of minority cultural distinctions and rejecting what they see as the subjugation of colonial nationalities. (162 words)

7. It can be inferred from the passage that a writer such as Eugenio Fernandez Mendez would most likely agree with which of the following statements concerning members of minority ethnic groups?

(A) It is necessary for the members of such groups to adapt to the culture of the majority.

(B) The members of such groups generally encounter a culture that is static and undifferentiated.

(C) Social mobility is the most important feature of the experience of members of such groups.

(D) Social scientists should emphasize the cultural and political aspects of the experience of members of such groups.

(E) The assimilation of members of such groups requires the forced abandonment of their authentic national roots.

8. In the context in which it appears, "subjugation" in the last sentence most nearly means

Ⓐ accommodation
Ⓑ subjection
Ⓒ assimilation
Ⓓ incorporation
Ⓔ defeatism

9. When cut, the synthetic material fiberglass, like asbestos, releases microscopic fibers into the air. It is known that people who inhale asbestos, fibers suffer impairment of lung functions. A study of 300 factory workers who regularly cut fiberglass showed that their lung capacity is, on average, only 90 percent of that of a comparable group of people who do not cut fiberglass.

The statements above, if true, most strongly support which of the following hypotheses?

(A) People who work with fiberglass are likely also to work with asbestos.
(B) Fiberglass fibers impair lung function in people who inhale them.
(C) Fiberglass releases as many fibers into the air when cut as does asbestos.
(D) Coarse fibers do not impair lung function in people who inhale them.
(E) If uncut, fiberglass poses no health risk to people who work with it.

Simone de Beauvoir's work greatly influenced Betty Friedan's----indeed, made it possible. Why, then, was it Friedan who became the prophet of women's emancipation in the United States? Political conditions, as well as a certain anti-intellectual bias, prepared Americans and the American media to better receive Friedan's deradicalized and highly pragmatic *The Feminine Mystique*, published in 1963, than Beauvoir's theoretical reading of women's situation in *The Second Sex*. In 1953 when *The Second Sex* first appeared in translation in the United States, the country had entered the silent, fearful fortress of the anticommunist McCarthy years (1950-1954), and Beauvoir was suspected of Marxist sympathies. Even *The Nation*, a generally liberal magazine, warned its readers against "certain political leanings" of the author. (120 words)

For the following question, consider each of the choices separately and select all that apply

10. It can be inferred from the passage that which of the following is a factor in the explanation of why *The Feminine Mystique* was received more positively in the United States than was *The Second Sex*?

A By 1963 political conditions in the United States had changed.

B Friedan's approach to the issue of women's emancipation was less radical than Beauvoir's.

C Readers did not recognize the powerful influence of Beauvoir's book on Friedan's ideas.

Exercise 21

Nevelson says, “I have always wanted to show the world that art is everywhere, except that it has to pass through a creative mind.” Using mostly discarded wooden objects like packing crates, broken pieces of furniture, and abandoned architectural ornaments, all of which she has hoarded for years, she assembles architectural constructions of great beauty and power. Creating very freely with no sketches, she glues and nails objects together, paints them black, or more rarely white or gold, and places them in boxes. These assemblages, walls, even entire environments create a mysterious, almost awe-inspiring atmosphere. Although she has denied any symbolic or religious intent in her works, their three-dimensional grandeur and even their titles, such as *Sky Cathedral* and *Night Cathedral*, suggest such connotations. (124 words)

1. Which of the following is one way in which Nevelson’s art illustrates her theory as it is expressed in the first sentence?
   (A) She sculpts in wood rather than in metal or stone.
   (B) She paints her sculptures and frames them in boxes.
   (C) She makes no preliminary sketches but rather allows the sculpture to develop as she works.
   (D) She puts together pieces of ordinary objects once used for different purposes to make her sculptures.
   (E) She does not deliberately attempt to convey symbolic or religious meanings through her sculpture.

Until recently astronomers have been puzzled by the fate of red giant and supergiant stars. When the core of a giant star whose mass surpasses 1.4 times the present mass of our Sun ($M_\odot$) exhausts its nuclear fuel, it is unable to support its own weight and collapses into a tiny neutron star. The gravitational energy released during this implosion of the core blows off the remainder of the star in a gigantic explosion, or a supernova.

Since around 50 percent of all stars are believed to begin their lives with masses greater than $1.4M_\odot$, we might expect that one out of every two stars would die as a supernova. But in fact, only one star in thirty dies such a violent death. The rest expire much more peacefully as planetary nebulas. Apparently most massive stars manage to lose sufficient material that their masses drop below the critical value of $1.4\ M_\odot$ before they exhaust their nuclear fuel. Evidence supporting this view comes from observations of IRC+10216, a pulsating giant star located 700 light-years away from Earth. A huge rate of mass loss ($1\ M_\odot$ every 10,000 years) has been deduced from infrared observations of ammonia ($NH_{3)}$ molecules located in the circumstellar cloud around IRC+10216.

Recent microwave observations of carbon monoxide (CO) molecules indicate a similar rate of mass loss and demonstrate that the escaping material extends outward from the star for a distance of at least one light-year. Because we know the size of the cloud around IRC+10216 and can use our observations of either NH_3 or CO to measure the outflow velocity, we can calculate an age for the circumstellar cloud. IRC+10216 has apparently expelled, in the form of molecules and dust grains, a mass equal to that of our entire Sun within the past ten thousand years. This implies that some stars can shed huge amounts of matter very quickly and thus may never expire as supernovas. Theoretical models as well as statistics on supernovas and planetary nebulas suggest that stars that begin their lives with masses around $6\ M_\odot$ shed sufficient material to drop below the critical value of $1.4M_\odot$. IRC+10216, for example, should do this in a mere 50,000 years from its birth, only an instant in the life of a star.

But what place does IRC+10216 have in stellar evolution? Astronomers suggest that stars like IRC+10216 are actually "protoplanetary nebulas" –old giant stars whose dense cores have almost but not quite rid themselves of the fluffy envelopes of gas around them. Once the star has lost the entire envelope, its exposed core becomes the central star of the planetary nebula and heats and ionizes the last vestiges of the envelope as it flows away into space. This configuration is a full-fledged planetary nebula, long familiar to optical astronomers.

2. The primary purpose of the passage is to
   (A) offer a method of calculating the age of circum-stellar clouds
   (B) describe the conditions that result in a star's expiring as a supernova
   (C) discuss new evidence concerning the composition of planetary nebulas
   (D) explain why fewer stars than predicted expire as supernovas
   (E) survey conflicting theories concerning the composition of circumstellar clouds

3. The view mentioned in the middle of the second paragraph serves to
   (A) reconcile seemingly contradictory facts
   (B) undermine a previously held theory
   (C) take into account data previously held to be insignificant
   (D) resolve a controversy
   (E) question new methods of gathering data

4. It can be inferred from the passage that the author assumes which of the following in the discussion of the rate at which IRC+10216 loses mass?

(A) The circumstellar cloud surrounding IRC+10216 consists only of CO and NH_3 molecules.

(B) The circumstellar cloud surrounding IRC+10216 consists of material expelled from that star.

(C) The age of a star is equal to that of its circumstellar cloud.

(D) The rate at which IRC+10216 loses mass varies significantly from year to year.

(E) Stars with a mass greater than 6 $M_\odot$ lose mass at a rate faster than stars with a mass less than 6 $M_\odot$ do.

5. According to information provided by the passage, which of the following stars would astronomers most likely describe as a planetary nebula?

(A) A star that began its life with a mass of 5.5 $M_\odot$, has exhausted its nuclear fuel, and has a core that is visible to astronomers

(B) A star that began its life with a mass of 6 $M_\odot$, lost mass at a rate of 1 $M_\odot$ per 10,000 years, and exhausted its nuclear fuel in 40,000 years

(C) A star that has exhausted its nuclear fuel, has a mass of 1.2 $M_\odot$, and is surrounded by a circumstellar cloud that obscures its core from view

(D) A star that began its life with a mass greater than 6 $M_\odot$, has just recently exhausted its nuclear fuel, and is in the process of releasing massive amounts of gravitational energy

(E) A star that began its life with a mass of 5.5 $M_\odot$, has yet to exhaust its nuclear fuel, and exhibits a rate of mass loss similar to that of IRC+10216

"Popular art" has a number of meanings, impossible to define with any precision, which range from folklore to junk. The poles are clear enough, but the middle tends to blur. The Hollywood Western of the 1930's, for example, has elements of folklore, but is closer to junk than to high art or folk art. There can be great trash, just as there is bad high art. The musicals of George Gershwin are great popular art, never aspiring to high art. Schubert and Brahms, however, used elements of popular music—folk themes—in works clearly intended as high art. The case of Verdi is a different one: he took a popular genre—bourgeois melodrama set to music (an accurate definition of nineteenth-century opera)—and, without altering its fundamental nature, transmuted it into high art. (133 words)

6. The author refers to Schubert and Brahms in order to suggest

(A) that their achievements are no less substantial than those of Verdi

(B) that their works are examples of great trash

(C) the extent to which Schubert and Brahms influenced the later compositions of Verdi

(D) a contrast between the conventions of nineteenth-century opera and those of other musical forms

(E) that popular music could be employed in compositions intended as high art

On turning 65 years old, everyone living in the town of Malton becomes eligible to receive a card that guarantees discounts on most goods and services sold in the town. Census records for 1990 show that 2, 450 inhabitants of Malton turned 64 in that year. Yet . in 1991 over 3,000 people applied for and properly received discount cards. So clearly some of Malton's population growth between 1990 and 1992 must be attributable to migration into the city by people in their mid -60's

7. Which of the following is an assumption on which the argument depends?

(A) The town of Malton has no complete census records for 1991.
(B) The overall size of the population of Malton grew by over 500 during 1990.
(C) Fewer people applied for and received discount cards in 1991 than did so in 1992.
(D) Among the people 65 years old or older who moved into Malton in 1991. there was no one who did not apply for a discount card .
(E) In general. people who applied for and received discount cards in 1991 first became eligible to do so in that year

One of the questions of interest in the study of the evolution of spiders is whether the weaving of orb webs evolved only once or several times. About half the 35,000 known kinds of spiders make webs; a third of the web weavers make orb webs. Since most orb weavers belong either to the Araneidae or the Uloboridae families, the origin of the orb web can be determined only by ascertaining whether the families are related.

Recent taxonomic analysis of individuals from both families indicates that the families evolved from different ancestors, thereby contradicting Wiehle's theory. This theory postulates that the families must be related, based on the assumption that complex behavior, such as web building, could evolve only once. According to Kullman, web structure is the only characteristic that suggests a relationship between families. The families differ in appearance, structure of body hair, and arrangement of eyes. Only Uloborids lack venom glands. Further identification and study of characteristic features will undoubtedly answer the question of the evolution of the orb web. (172 words)

8. The primary purpose of the passage is to
   (A) settle the question of whether orb webs evolved once or more than once
   (B) describe scientific speculation concerning an issue related to the evolution of orb webs
   (C) analyze the differences between the characteristic features of spiders in the Araneidae and Uloboridae families
   (D) question the methods used by earlier investigators of the habits of spiders
   (E) demonstrate that Araneidae spiders are not related to Uloboridae spiders

For the following question, consider each of the choices separately and select all that apply

9. According to the passage, members of the Araneidae family can be distinguished from members of the Uloboridae family by all of the following

   A the presence of venom glands
   B the structure of their body hair
   C the arrangement of their eyes

10. Which of the following statements, if true, most weakens Wiehle's theory that complex behavior could evolve only once?
   (A) Horses, introduced to the New World by the Spaniards, thrived under diverse climatic conditions.
   (B) Plants of the Palmaceae family, descendants of a common ancestor, evolved unique seed forms even though the plants occupy similar habitats throughout the world.
   (C) All mammals are descended from a small, rodentlike animal whose physical characteristics in some form are found in all its descendants.
   (D) Plants in the Cactaceae and Euphorbiaceae families, although they often look alike and have developed similar mechanisms to meet the rigors of the desert, evolved independently.
   (E) The Cuban anole, which was recently introduced in the Florida wilds, is quickly replacing the native Florida chameleon because the anole has no competitors.

Exercise 22

Historically, a cornerstone of classical empiricism has been the notion that every true generalization must be confirmable by specific observations. In classical empiricism, the truth of "All balls are red," for example, is assessed by inspecting balls; any observation of a *non* red ball refutes unequivocally the proposed generalization.

For W.V.O. Quine, however, this constitutes an overly "narrow" conception of empiricism. "All balls are red," he maintains, forms one strand within an entire web of statements (our knowledge); individual observations can be referred only to this web as a whole. As new observations are collected, he explains, they must be integrated into the web. Problems occur only if a contradiction develops between a new observation, say, "That ball is blue," and the preexisting statements. In that case, he argues, *any* statement or combination of statements (not merely the "offending" generalization, as in classical empiricism) can be altered to achieve the fundamental requirement, a system free of contradictions, even if, in some cases, the alteration consists of labeling the new observation a "hallucination."

(172 words)

1. According to Quine's conception of empiricism, if a new observation were to contradict some statement already within our system of knowledge, which of the following would be true?

(A) The new observation would be rejected as untrue.

(B) Both the observation and the statement in our system that it contradicted would be discarded.

(C) New observations would be added to our web of statements in order to expand our system of knowledge.

(D) The observation or some part of our web of statements would need to be adjusted to resolve the contradiction.

(E) An entirely new field of knowledge would be created.

For the following question, consider each of the choices separately and select all that apply

2. It can be inferred from the passage that Quine considers classical empiricism to be "overly 'narrow' "for which of the following reasons?

A Classical empiricism requires that our system of generalizations be free of contradictions.

B Classical empiricism demands that in the case of a contradiction between an individual observation and a generalization, the generalization must be abandoned.

C Classical empiricism asserts that every observation will either confirm an existing generalization or initiate a new generalization.

Shergottites, the name given to three anomalous achondrites (igneous meteorites lacking chondrules) so far discovered on Earth, present scientists with a genuine enigma. Shergottites crystallized from molten rock less than 1.1 billion years ago (some 3.5 billion years later than typical achondrites) and were presumably ejected into space when an object impacted on a body similar in chemical composition to Earth. While some scientists speculate that shergottites derive from Io (a volcanically active moon of Jupiter), recent measurements suggest that since Io's surface is rich in sulfur and sodium, the chemical composition of its volcanic products would probably be unlike that of the shergottites. Moreover, any fragments dislodged from Io by interbody impact would be unlikely to escape the gravitational pull of Jupiter.

The only other logical source of shergottites is Mars. Space-probe photographs indicate the existence of giant volcanoes on the Martian surface. From the small number of impact craters that appear on Martian lava flows, one can estimate that the planet was volcanically active as recently as a half-billion years ago—and may be active today.

(178 words)

3. The passage provides information to answer which of the following questions?
   (A) What is the precise age of the solar system?
   (B) How did shergottites get their name?
   (C) What are the chemical properties shared by shergottites and Martian soils?
   (D) How volcanically active is the planet Jupiter?
   (E) What is a major feature of the Martian surface?

For the following question, consider each of the choices separately and select all that apply

4. It can be inferred from the passage that each of the following is a consideration in determining whether a particular planet is a possible source of shergottites that have been discovered on Earth

A strength of the planet's field of gravity
B proximity of the planet to its moons
C chemical composition of the planet's surface

When a driver is suspected of having had too much to drink, testing the driver's ability to walk a straight line gives a more reliable indication of fitness to drive than does testing the driver's blood-alcohol level.

5. Which of the following, if true, best supports the claim made in the statement above?

(A) Not all observers will agree whether or not an individual has succeeded in walking a straight line.

(B) Because of genetic differences and variations in acquired tolerance to alcohol, some individuals suffer more serious motor impairment from a given high blood-alcohol level than do others.

(C) Tests designed to measure blood-alcohol levels are accurate, inexpensive, and easy to administer.

(D) More than half the drivers involved in fatal accidents have blood-alcohol levels that exceed the legal limit, whereas in less-serious accidents the proportion of legally intoxicated drivers is lower.

(E) Some individuals with high blood-alcohol levels are capable of walking a straight line but are not capable of driving safely.

In *Raisin in the Sun*, Lorraine Hansberry does not reject integration or the economic and moral promise of the American dream; rather, she remains loyal to this dream while looking, realistically, at its incomplete realization. Once we recognize this dual vision, we can accept the play's ironic nuances as deliberate social commentaries by Hansberry rather than as the "unintentional" irony that Bigsby attributes to the work. Indeed a curiously persistent refusal to credit Hansberry with a capacity for intentional irony has led some critics to interpret the play's thematic conflicts as mere confusion, contradiction, or eclecticism. Isaacs, for example, cannot easily reconcile Hansberry's intense concern for her race with her ideal of human reconciliation. But the play's complex view of Black self-esteem and human solidarity as compatible is no more "contradictory" than Du Bois' famous, well-considered ideal of ethnic self-awareness coexisting with human unity, or Fanon's emphasis on an ideal internationalism that also accommodates national identities and roles. (158 words)

6.The author's primary purpose in this passage is to

(A) explain some critics' refusal to consider *Raisin in the Sun* a deliberately ironic play

(B)suggest that ironic nuances ally *Raisin in the Sun* with Du Bois' and Fanon's writings

(C) analyze the fundamental dramatic conflicts in *Raisin in the Sun*

(D) justify the inclusion of contradictory elements in *Raisin in the Sun*

(E) affirm the thematic coherence underlying *Raisin in the Sun*

7. Select the sentence that the author of the passage reinforce his criticism of responses such as Isaacs' to *Raisin in the Sun*

8.The author of the passage would probably consider which of the following judgments to be most similar to the reasoning of critics?

(A) The world is certainly flat; therefore, the person proposing to sail around it is unquestionably foolhardy.

(B) Radioactivity cannot be directly perceived; therefore, a scientist could not possibly control it in a laboratory.

(C) The painter of this picture could not intend it to be funny, therefore, its humor must result from a lack of skill.

(D) Traditional social mores are beneficial to culture; therefore, anyone who deviates from them acts destructively.

(E) Filmmakers who produce documentaries deal exclusively with facts; therefore, a filmmaker who reinterprets particular events is misleading us.

In December 1992 Tideville Shopping Mall repaired and improved the lighting in the mall's parking lots, and in 1993 car thefts and attempted car thefts from those lots decreased by 76 percent from the previous year. Since potential car thieves are generally deterred by good lighting, the decrease can be attributed to these improvements.

9. Which of the following, if true, most helps to strengthen the argument above?
   (A) Both in 1992 and in 1993, most of the cars stolen from the mall's parking lots were relatively new and expensive luxury models.
   (B) Most of the cars that were stolen from the mall in 1992 were stolen between 11 A. M. and 4 P.M.
   (C) Tideville Shopping Mall is one of only three shopping malls in the Tideville area.
   (D) In the town of Tideville, where the mall is located, the number of car thefts was about the same in 1993 as in 1992.
   (E) In 1993 the number of security officers patrolling the mall's parking lots at night was doubled.

The transplantation of organs from one individual to another normally involves two major problems: (1) organ rejection is likely unless the transplantation antigens of both individuals are nearly identical, and (2) the introduction of any unmatched transplantation antigens induces the development by the recipient of donor-specific lymphocytes that will produce violent rejection of further transplantations from that donor. However, we have found that, among many strains of rats, liver transplants are never rejected, and that they even induce a state of donor-specific unresponsiveness. Our hypothesis is that (1) many strains of rats simply cannot mount a sufficiently vigorous destructive immune-response (using lymphocytes) to outstrip the liver's relatively great capacity to protect itself from immune-response damage and that (2) the systemic unresponsiveness observed is due to concentration of the recipient's donor-specific lymphocytes at the site of the liver transplant. (138 words)

10. Which of the following new findings about strains of rats that do not normally reject liver transplants, if true, would support the authors' hypothesis?

I. Stomach transplants are accepted by the recipients in all cases.

II. Increasing the strength of the recipient's immune-response reaction can induce liver-transplant rejection.

III. Organs from any other donor can be transplanted without rejection after liver transplantation.

IV. Preventing lymphocytes from being concentrated at the liver transplant produces acceptance of skin transplants.

(A) II only
(B) I and III only
(C) II and IV only
(D) I, II, and III only
(E) I, III, and IV only

Exercise 23

The common belief of some linguists that each language is a perfect vehicle for the thoughts of the nation speaking it is in some ways the exact counterpart of the conviction of the Manchester school of economics that supply and demand will regulate everything for the best. Just as economists were blind to the numerous cases in which the law of supply and demand left actual wants unsatisfied, so also many linguists are deaf to those instances in which the very nature of a language calls forth misunderstandings in everyday conversation, and in which, consequently, a word has to be modified or defined in order to present the idea intended by the speaker: "He took his stick-no, not John's, but his own." No language is perfect, and if we admit this truth, we must also admit that it is not unreasonable to investigate the relative merits of different languages or of different details in languages. (155 words)

1.The primary purpose of the passage is to

(A) analyze an interesting feature of the English language

(B) refute a belief held by some linguists

(C) show that economic theory is relevant to linguistic study

(D) illustrate the confusion that can result from the improper use of language

(E) suggest a way in which languages can be made more nearly perfect

For the following question, consider each of the choices separately and select all that apply

2. The misunderstanding presented by the author in the passage is similar to which of the following?

A X uses the word "you" to refer to a group, but Y thinks that X is referring to one person only.

B X mistakenly uses the word "anomaly" to refer to a typical example, but Y knows that "anomaly" means "exception."

C X uses the word "bachelor" to mean "unmarried man," but Y mistakenly thinks that bachelor means "unmarried woman."

3.In presenting the argument, the author does all of the following EXCEPT

(A) give an example

(B) draw a conclusion

(C) make a generalization

(D) make a comparison

(E) present a paradox

Currently, there are two models of solar activity. The first supposes that the Sun's internal motions (caused by rotation and convection) interact with its large-scale magnetic field to produce a dynamo, a device in which mechanical energy is converted into the energy of a magnetic field. In short, the Sun's large-scale magnetic field is taken to be self-sustaining, so that the solar-activity cycle it drives would be maintained with little overall change for perhaps billions of years. The alternative explanation supposes that the Sun's large-scale magnetic field is a remnant of the field the Sun acquired when it formed, and is not sustained against decay. In this model, the solar mechanism dependent on the Sun's magnetic field runs down more quickly. Thus, the characteristics of the solar-activity cycle could be expected to change over a long period of time.

(140 words)

4.Which of the following statements about the two models of solar activity, as they are described in the passage, is accurate?

(A) In both models cyclical solar activity is regarded as a long-lived feature of the Sun, persisting with little change over billions of years.

(B) In both models the solar-activity cycle is hypothesized as being dependent on the large-scale solar magnetic field.

(C) In one model the Sun's magnetic field is thought to play a role in causing solar activity, whereas in the other model it is not.

(D) In one model solar activity is presumed to be unrelated to terrestrial phenomena, whereas in the other model solar activity is thought to have observable effects on the Earth.

(E) In one model cycles of solar activity with Periodicities longer than a few decades are considered to be impossible, whereas in the other model such cycles are predicted.

Like most other coastal towns in Norway, the town of Stavanger was quiet and peaceful until the early 1960's, when it became Norway's center for offshore oil exploration. Between then and now, violent crime and vandalism in Stavanger have greatly increased. Stavanager's social problems probably resulted from the oil boom, since violent crime and vandalism have remained low in coastal towns in Norway that have had no oil boom.

5. Which of the following most accurately describes the method of reasoning employed in the argument?

(A) Arguing that a circumstance is not a precondition for a phenomenon on the grounds that the phenomenon sometimes occurs where the circumstance is not present

(B) Arguing that a circumstance is a cause of a phenomenon on the grounds that the phenomenon has not occurred where the circumstance is not present

(C) Arguing that a particular thing cannot have caused a phenomenon because that thing was not present before the phenomenon occurred

(D) Attempting to establish a claim by arguing that the denial of the claim is inconsistent with the observed facts

(E) Attempting to establish that certain circumstances that would have had to occur for a particular explanation to be correct could not have occurred

Modern archaeological finds can still contribute much to the study of ancient literature. For example, forty years ago a survey of the early Greek dramatist Aeschylus' plays would have started with *The Suppliant Women.* Many factors internal to the play, but perhaps most especially the prominence of the chorus, led scholars to consider it one of Aeschylus' earlier works. The consensus was that here was a drama truly reflecting an early stage in the evolution of tragedy out of choral lyric. The play was dated as early as the 490's B.C., in any event, well before Aeschylus' play *The Persians* of 472 B.C. Then, in 1952, a fragment of papyrus found at Oxyrhynchus was published. The fragment announced that Aeschylus won first prize with his Danaid tetralogy, of which *The Suppliant Women* is the opening play, and defeated Sophocles in the process. Sophocles did not compete in any dramatic contest before 468 B.C., when he won his first victory. Hence, the Danaid tetralogy must be put after 468 B.C. (169 words)

6. According to the passage, in the absence of definite knowledge concerning the dates of composition of ancient literary works, literary historians do which of the following when trying to establish the chronology of an author's work?

(A) Make assumptions about a single work's date of composition if such assumptions would not seriously affect interpretations of other works by the same author.
(B) Draw inferences concerning the date of a work's composition based on evidence internal to that work and on the author's other works.
(C) Ignore the date of a work's composition which is supplied by archaeological research when literary factors internal to the work contradict that date.
(D) Refrain from speculation concerning a work's date of composition unless archaeological finds produce information concerning it.
(E) Estimate the date of a work's composition without attempting to relate it to the author's development as an artist.

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As Gilbert White, Darwin, and others observed long ago, all species appear to have the innate capacity to increase their numbers from generation to generation. The task for ecologists is to untangle the environmental and biological factors that hold this intrinsic capacity for population growth in check over the long run. The great variety of dynamic behaviors exhibited by different populations makes this task more difficult: some populations remain roughly constant from year to year; others exhibit regular cycles of abundance and scarcity; still others vary wildly, with outbreaks and crashes that are in some cases plainly correlated with the weather, and in other cases not.

To impose some order on this kaleidoscope of patterns, one school of thought proposes dividing populations into two groups. These ecologists posit that the relatively steady populations have "density- dependent" growth parameters; that is, rates of birth, death, and migration which depend strongly on population density. The highly varying populations have "density-independent" growth parameters, with vital, rates buffeted by environmental events; these rates fluctuate in a way that is wholly independent of population density.

This dichotomy has its uses, but it can cause problems if taken too literally. For one thing, no population can be driven entirely by density-independent factors all the time. No matter how severely or unpredictably birth, death and migration rates may be fluctuating around their long-term averages, if there were no density-dependent effects, the population would, in the long run, either increase or decrease without bound (barring a miracle by which gains and losses canceled exactly). Put another way, it may be that on average 99 percent of all deaths in a population arise from density-independent causes, and only one percent from factors varying with density. The factors making up the one percent may seem unimportant, and their cause may be correspondingly hard to determine. Yet, whether recognized or not, they will usually determine the long-term average population density.

In order to understand the nature of the ecologist's investigation, we may think of the density-dependent effects on growth parameters as the "signal" ecologists are trying to isolate and interpret, one that tends to make the population increase from relatively low values or decrease from relatively high ones, while the density-independent effects act to produce "noise" in the population dynamics. For populations that remain relatively constant, or that oscillate around repeated cycles, the signal can be fairly easily characterized and its effects described, even though the causative biological mechanism may remain unknown. For irregularly fluctuating populations, we are likely to have too few observations to have any hope of extracting the signal from the overwhelming noise. But it now seems clear that all populations are regulated by a mixture of density- dependent and density-independent effects in varying proportions.

7.The author of the passage is primarily concerned with

(A) discussing two categories of factors that control population growth and assessing their relative importance

(B) describing how growth rates in natural populations fluctuate over time and explaining why these changes occur

(C) proposing a hypothesis concerning population sizes and suggesting ways to test it

(D) posing a fundamental question about environmental factors in population growth and presenting some currently accepted answers

(E) refuting a commonly accepted theory about population density and offering a new alternative

8. It can be inferred from the passage that the author considers the dichotomy discussed in the second paragraph to be

(A) applicable only to erratically fluctuating populations

(B) useful, but only if its limitations are recognized

(C) dangerously misleading in most circumstances

(D) a complete and sufficient way to account for observed phenomena

(E) conceptually valid, but too confusing to apply on a practical basis

9.Which of the following statements can be inferred from the last paragraph?

(A) For irregularly fluctuating populations, doubling the number of observations made will probably result in the isolation of density-dependent effects.

(B) Density-dependent effects on population dynamics do not occur as frequently as do density-independent effects.

(C) At present, ecologists do not understand any of the underlying causes of the density-dependent effects they observe in population dynamics..

(D) Density-dependent effects on growth parameters are thought to be caused by some sort of biochemical "signaling" that ecologists hope eventually to understand.

(E) It is sometimes possible to infer the existence of a density-dependent factor controlling population growth without understanding its causative mechanism.

For the following question, consider each of the choices separately and select all that apply

10. .According to the passage, all of the following behaviors have been exhibited by different populations

A roughly constant population levels from year to year

B regular cycles of increases and decreases in numbers

C erratic increases in numbers correlated with the weather

Exercise 24

Excavations at a Mayan site have uncovered jewelry workshops located some distance from the center of the site on roads radiating outward from the center. Since the nobility lived only in the area of the center, archaeologists conclude that these workshops made jewelry, not for the nobility, but for a middle class that must have been prosperous enough to afford it.

1. The archaeologists' argument assumes which of the following about the artisans who worked in the workshops'

(A) They were themselves prosperous members of a middle class.
(B) They lived near their workshops.
(C) Their products were not made from the same materials as was jewelry for the nobility.
(D) They worked full-time at making jewelry and did not engage in farming
(E) They did not take the jewelry they had made in the workshops to clients who were members of the nobility.

Practically speaking, the artistic maturing of the cinema was the single-handed achievement of David W. Griffith (1875-1948). Before Griffith, photography in dramatic films consisted of little more than placing the actors before a stationary camera and showing them in full length as they would have appeared on stage. From the beginning of his career as a director, however, Griffith, because of his love of Victorian painting, employed composition. He conceived of the camera image as having a foreground and a rear ground, as well as the middle distance preferred by most directors. By 1910 he was using close-ups to reveal significant details of the scene or of the acting and extreme long shots to achieve a sense of spectacle and distance. His appreciation of the camera's possibilities produced novel dramatic effects.

(131 words)

2. Select the sentence in which the author asserts that Griffith played an important role in the development of the cinema.

3. The author's attitude toward photography in the cinema before Griffith can best be described as

(A) sympathetic
(B) nostalgic
(C) amused
(D) condescending
(E) hostile

Because of its accuracy in outlining the Earth's subsurface, the seismic-reflection method remains the most important tool in the search for petroleum reserves. In field practice, a subsurface is mapped by arranging a series of wave-train sources, such as small dynamite explosions, in a grid pattern. As each source is activated, it generates a wave train that moves downward at a speed determined uniquely by the rock's elastic characteristics. As rock interfaces are crossed, the elastic characteristics encountered generally change abruptly, which causes part of the energy to be reflected back to the surface, where it is recorded by seismic instruments. The seismic records must be processed to correct for positional differences between the source and the receiver, for unrelated wave trains, and for multiple reflections from the rock interfaces. Then the data acquired at each of the specific source locations are combined to generate a physical profile of the subsurface, which can eventually be used to select targets for drilling.

(162 words)

For the following question, consider each of the choices separately and select all that apply

4. According to the passage, in the seismic-reflection method which of the following have a significant effect on the signal detected by the seismic instruments

A presence of unrelated wave trains
B placement of the seismic instruments
C properties of rocks through which the wave train has traveled

5. It can be inferred from the passage that the seismic-reflection method would be likely to yield an inaccurate physical profile of the subsurface in which of the following circumstances?

(A) If the speed at which the wave train moved downward changed
(B) If the receiver were not positioned directly at the wave-train source
(C) If the rock on one side of a rock interface had similar elastic characteristics to those of the rock on the other side
(D) If the seismic records obtained for the different sources in a grid were highly similar to each other
(E) If there were no petroleum deposits beneath the area defined by the grid of wave-train sources

6. Which of the following best describes the organization of the passage?

(A) A method is criticized, and an alternative is suggested.
(B) An illustration is examined, and some errors are exposed.
(C) An assertion is made, and a procedure is outlined.
(D) A series of examples is presented, and a conclusion is drawn.
(E) A hypothesis is advanced, and supporting evidence is supplied.

Paradoxically, with all of our natural, intuitive, commonsense capacity to grasp human relations, the science of human relations has been one of the last to develop. Different explanations of this paradox have been suggested. One is that science would destroy the vain and pleasing illusions people have about themselves; but we might ask why people have always loved to read pessimistic, debunking writings, from Ecclesiastes to Freud. It has also been proposed that just because we know so much about people intuitively, there has been less incentive for studying them scientifically; why should one develop a theory, carry out systematic observations, or make predictions about the obvious?

(107 words)

7. The author refers to people who are attracted to "pessimistic, debunking writings" in order to support which of the following ideas?

(A) Interesting books about human relations are typically pessimistic.

(B) People tend to ignore scientific explanations of human relations.

(C) People rarely hold pleasing illusions about themselves.

(D) A scientific approach human relations would undermine the pleasing illusions people hold of themselves.

(E) It is doubtful that the science of human relations developed slowly because of a desire to maintain pleasing illusions.

Legislator: We should not waste any more of the taxpayers' money on the government's job-creation program. The unemployment rate in this country has actually risen since the program was begun, so the program has clearly been a failure.

8. Which of the following is an assumption on which the legislator's argument depends?
   (A) The budget of the job-creation program has typically increased every year.
   (B) The unemployment rate would not have risen even more than it has if the job-creation program had not been in existence.
   (C) The unemployment rate is higher now than at any time before the inception of the job-creation program.
   (D) If the job-creation program had been run more efficiently, it could have better served its purpose.
   (E) Other government programs are no more effective in reducing unemployment than is the job-creation program.

Why during sickness should body temperature of warm-blooded animal rise? It has long been known that the level of serum iron in animals falls during infection. Garibaldi first suggested a relationship between fever and iron. He found that microbial synthesis of siderophores -- substances that bind iron -- in bacteria of the genus *Salmonella* declined at environmental temperatures above 37 ℃ and stopped at 40.3 ℃. Thus, fever would make it more difficult for an infecting bacterium to acquire iron and thus to multiply. Cold-blooded animals were used to test this hypothesis. Kluger reported that of iguanas infected with the potentially lethal bacterium *A. hydrophilia*, more survived at temperatures of 42 ℃ than at 37 ℃, even though healthy animals prefer the lower temperature. When animals at 42 ℃ were injected with an iron solution, however, mortality rates increased significantly.

(135 words)

9. According to the passage, Garibaldi determined which of the following?
   (A) That serum iron is produced through microbial synthesis
   (B) That microbial synthesis of siderophores in warm-blooded animals is more efficient at higher temperatures.
   (C) That only iron bound to other substances can be used by bacteria.
   (D) That there is a relationship between the synthesis of siderophores in bacteria of the genus *Salmonella* and environmental temperature.
   (E) That bacteria of the genus *Salmonella* require iron as a nutrient.

10. If it were to be determined that similar phenomena occur in warm-blooded animals, which of the following, assuming each is possible, is likely to be the most effective treatment for warm-blooded animals with bacterial infections?
   (A) Administering a medication that lowers the animals' body temperature
   (B) Injecting the animals with an iron solution
   (C) Administering a medication that makes serum iron unavailable to bacteria
   (D) Providing the animals with reduced-iron diets
   (E) Keeping the animals in an environment with temperatures higher than 37 ℃

Exercise 25

Since 1953, many experimental attempts to synthesize the chemical constituents of life under "primitive Earth conditions" have demonstrated that a variety of the complex molecules currently making up living organisms could have been present in the early ocean and atmosphere, with only one limitation: such molecules are synthesized far less readily when oxygen-containing compounds dominate the atmosphere. Therefore some scientists postulate that the Earth's earliest atmosphere, unlike that of today, was dominated by hydrogen, methane, and ammonia. From these studies, scientists have concluded that the surface of the primitive Earth was covered with oceans containing the molecules fundamental to life. Although, at present, scientists cannot explain how these relatively small molecules combined to produce larger, more complex molecules, some scientists have precipitously ventured hypotheses that attempt to explain the development, from larger molecules, of the earliest self-duplicating organisms.

(138 words)

1. According to the passage, which of the following can be inferred about the process by which the chemical constituents of life were synthesized under primitive Earth conditions?
   (A) The synthesis is unlikely to occur under current atmospheric conditions
   (B) The synthesis is common in modern laboratories.
   (C)The synthesis occurs more readily in the atmosphere than in the ocean.
   (D)The synthesis easily produces the most complex organic molecules.
   (E)The synthesis is accelerated by the presence of oxygen-containing compounds.

2.It can be inferred from the passage that some scientists assume which of the following concerning " larger, more complex molecules"
   (A) The earliest atmosphere was formed primarily of these molecules.
   (B) Chemical processes involving these molecules proceeded much more slowly under primitive Earth conditions.
   (C) The presence of these molecules would necessarily precede the existence of simple organisms.
   (D) Experimental techniques will never be sufficiently sophisticated to produce in the laboratory simple organisms from these chemical constituents.
   (E) Explanations could easily be developed to explain how simple molecules combined to form these more complex ones.

Over the last 40 years there has been a great increase not only in the number of agricultural pesticides in use but also in the care and sophistication with which they are used by farmers. Nevertheless, the proportion of agricultural crops lost to certain pests worldwide has increased over the same period, even when the pests concerned have not developed resistance to existing pesticides.

3. Which of the following, if true, best explains how improvements in pesticide use have been accompanied by greater losses to certain pests?

(A) Some dangerous but relatively ineffective pesticides common 40 years ago are no longer in widespread use.

(B) As pesticides have become increasingly pest-specific, controlling certain pests with pesticides has turned out to cost more in many cases than the value of crop losses caused by those pests.

(C) Because today's pesticides typically have more specific application conditions than did pesticides in use 40 years ago, today's farmers observe their fields more closely than did farmers 40 years ago.

(D) Certain pest-control methods that some farmers use today do not involve the use of chemical pesticides but are just as effective in eliminating insect pests as those that do.

(E) Forty years ago, much less was known about the effects of pesticides on humans and other mammalian species than is now known.

It is frequently assumed that the mechanization of work has a revolutionary effect on the lives of the people who operate the new machines and on the society into which the machines have been introduced. For example, it has been suggested that the employment of women in industry took them out of the household, their traditional sphere, and fundamentally altered their position in society. In the nineteenth century, when women began to enter factories, Jules Simon, a French politician, warned that by doing so, women would give up their femininity. Friedrich Engels, however, predicted that women would be liberated from the "social, legal, and economic subordination" of the family by technological developments that made possible the recruitment of "the whole female sex into public industry." Observers thus differed concerning the social desirability of mechanization's effects, but they agreed that it would transform women's lives.

Historians, particularly those investigating the history of women, now seriously question this assumption of transforming power. They conclude that such dramatic technological innovations as the spinning jenny, the sewing machine, the typewriter, and the vacuum cleaner have not resulted in equally dramatic social changes in women's economic position or in the prevailing evaluation of women's work. The employment of young women in textile mills during the Industrial Revolution was largely an extension of an older pattern of employment of young, single women as domestics. It was not the change in office technology, but rather the separation of secretarial work, previously seen as an apprenticeship for beginning managers, from administrative work that in the 1880's created a new class of "dead-end" jobs, thenceforth considered "women's work." The increase in the numbers of married women employed outside the home in the twentieth century had less to do with the mechanization of housework and an increase in leisure time for these women than it did with their own economic necessity and with high marriage rates that shrank the available pool of single women workers, previously, in many cases, the only women employers would hire.

Women's work has changed considerably in the past 200 years, moving from the household to the office or the factory, and later becoming mostly white-collar instead of blue-collar work. Fundamentally, however, the conditions under which women work have changed little since before the Industrial Revolution: the segregation of occupations by gender, lower pay for women as a group, jobs that require relatively low levels of skill and offer women little opportunity for advancement all persist, while women's household labor remains demanding. Recent historical investigation has led to a major revision of the notion that technology is always inherently revolutionary in its effects on society. Mechanization may even have slowed any change in the traditional position of women both in the labor market and in the home.

4.Which of the following statements best summarizes the main idea of the passage?

(A) The effects of the mechanization of women's work have not borne out the frequently held assumption that new technology is inherently revolutionary.

(B) Recent studies have shown that mechanization revolutionizes a society's traditional values and the customary roles of its members.

(C) Mechanization has caused the nature of women's work to change since the Industrial Revolution.

(D) The mechanization of work creates whole new classes of jobs that did not previously exist.

(E) The mechanization of women's work, while extremely revolutionary it its effects, has not, on the whole, had the deleterious effects that some critics had feared.

5. It can be inferred from the passage that the author would consider which of the following to be an indication of a fundamental alteration in the conditions of women's work?

(A) Statistics showing that the majority of women now occupy white-collar positions

(B) Interviews with married men indicating that they are now doing some household tasks

(C) Surveys of the labor market documenting the recent creation of a new class of jobs in electronics in which women workers outnumber men four to one

(D) Census results showing that working women's wages and salaries are, on the average, as high as those of working men

(E) Enrollment figures from universities demonstrating that increasing numbers of young women are choosing to continue their education beyond the undergraduate level

For the following question, consider each of the choices separately and select all that apply

6. Which of the following statement about many employers before the twentieth century are NOT implied in the passage?

A They did not employ women in factories.

B They tended to employ single rather than married women.

C They hired women only when qualified men were not available to fill the open positions.

7.Which of the following best describes the function of the concluding sentence of the passage?

(A) It sums up the general points concerning the mechanization of work made in the passage as a whole.

(B) It draws a conclusion concerning the effects of the mechanization of work which goes beyond the evidence presented in the passage as a whole.

(C) It restates the point concerning technology made in the sentence immediately preceding it.

(D) It qualifies the author's agreement with scholars who argue for a major revision in the assessment of the impact of mechanization on society

(E) It suggests a compromise between two seemingly contradictory views concerning the effects of mechanization on society.

Researchers are finding that in many ways an individual bacterium is more analogous to a component cell of a multicellular organism than it is to a free-living, autonomous organism. *Anabaena*, a freshwater bacteria is a case in point. Among photosynthetic bacteria, *Anabaena* is unusual: it is capable of both photosynthesis and nitrogen fixation. Within a single cell, these two biochemical processes are incompatible: oxygen produced during photosynthesis, inactivates the nitrogenase required for nitrogen fixation. In *Anabaena* communities, however, these processes can coexist. When fixed nitrogen compounds are abundant, *Anabaena* is strictly photosynthetic and its cells are all alike. When nitrogen levels are low, however, specialized cells called heterocysts are produced which lack chlorophyll (necessary for photosynthesis) but which can fix nitrogen by converting nitrogen gas into a usable form. Submicroscopic channels develop which connect the heterocyst cells with the photosynthetic ones and which are used for transferring cellular products between the two kinds of *Anabaena* cells.

(156 words)

8.It can be inferred from the passage that cell differentiation within *Anabaena* is regulated by the

(A) amount of oxygen *Anabaena* cells produce
(B) season of the year
(C) amount of fixed nitrogen compounds available
(D) number of microscopic channels uniting *Anabaena* cells
(E) amount of chlorophyll in *Anabaena* cells

9.The author uses the example of *Anabaena* to illustrate the

(A) uniqueness of bacteria among unicellular organisms
(B) inadequacy of an existing view of bacteria
(C) ability of unicellular organisms to engage in photosynthesis
(D) variability of a freshwater bacteria
(E) difficulty of investigating even the simplest unicellular organisms

Scholars often fail to see that music played an important role in the preservation of African culture in the United States. They correctly note that slavery stripped some cultural elements from Black people-their political and economic systems-but they underestimate the significance of music in sustaining other African cultural values. African music, unlike the music of some other cultures, was based on a total vision of life in which music was not an isolated social domain. In African culture music was pervasive, serving not only religion, but all phases of life, including birth, death, work, and play. Music, like art in general, was so inextricably a part of African culture that it became a crucial means of preserving the culture during and after the dislocations of slavery.

(126 words)

10. In the argument given , the two highlighted portions play which of the following roles?

Ⓐ The first sentence introduces the topic of the passage and the last one supports the main idea of the passage.

Ⓑ The first sentence presents a thesis and the last one further develops the thesis.

Ⓒ The first sentence summarizes the main idea of the passage and the last one paraphrases it literally.

Ⓓ The first sentence presents a context for the discussion of the passage and the last one evaluates the discussion.

Ⓔ The first sentence presents the negative thesis of the passage and the last one presents the positive thesis.

Exercise 26

Authorities in California required drivers to use their headlights on a certain road during the daytime as well as at night and found that annual accident rates on the road fell 15 percent from the previous level. They concluded that applying the daytime rule statewide would lead to a similar reduction in accidents.

1. Which of the following, if true, most strengthens the authorities' argument?

(A) Because an alternate route became available, the volume of traffic on the test road decreased during the test period.

(B) Drivers were informed of the requirement to use their headlights on the test road by means of a series of three conspicuous signs in each direction of travel.

(C) Under certain conditions, among them fog and heavy rain, most drivers in California already use their headlights during the daytime.

(D) Full-scale application of the daytime rule would cause headlight bulbs to burn out sooner than they currently do and thus to require more frequent replacement.

(E) The test road was selected to include a great variety of the sorts of road conditions that drivers in California are likely to encounter.

The essential condition for the decay of the vacuum is the presence of an intense electric field. As a result of the decay of the vacuum, the space permeated by such a field can be said to acquire an electric charge, and it can be called a charged vacuum. The particles that materialize in the space make the charge manifest. An electric field of sufficient intensity to create a charged vacuum is likely to be found in only one place: in the immediate vicinity of a superheavy atomic nucleus, one with about twice as many protons as the heaviest natural nuclei known. A nucleus that large cannot be stable, but it might be possible to assemble one next to a vacuum for long enough to observe the decay of the vacuum.

(131 words)

2. The author's assertions concerning the conditions that lead to the decay of the vacuum would be most weakened if which of the following occurred?

(A) Scientists created an electric field next to a vacuum, but found that the electric field was not intense enough to create a charged vacuum.

(B) Scientists assembled a superheavy atomic nucleus next to a vacuum, but found that no virtual particles were created in the vacuum's region of space.

(C) Scientists assembled a superheavy atomic nucleus next to a vacuum, but found that they could not then detect any real particles in the vacuum's region of space.

(D)Scientists introduced a virtual electron and a virtual positron into a vacuum's region of space, but found that the vacuum did not then fluctuate.

(E) Scientists introduced a real electron and a real positron into a vacuum's region of space, but found that the total energy of the space increased by the energy equivalent of the mass of the particles.

In a recent study, David Cressy examines two central questions concerning English immigration to New England in the 1630's: what kinds of people immigrated and why? Cressy finds that most adult immigrants were skilled in farming or crafts, were literate, and were organized in families. Each of these characteristics sharply distinguishes the 21,000 people who left for New England in the 1630's from most of the approximately 377,000 English people who had immigrating, to America by 1700.

With respect to their reasons for immigrating, Cressy does not deny the frequently noted fact that some of the immigrants of the 1630's, most notably the organizers and clergy, advanced religious explanations for departure, but he finds that such explanations usually assumed primacy only in retrospect. When he moves beyond the principal actors, he finds that religious explanations were less frequently offered and he concludes that most people immigrated because they were recruited by promises of material improvement.

(155 words)

3. In the passage, the author is primarily concerned with
(A) summarizing the findings of an investigation
(B) analyzing a method of argument
(C) evaluating a point of view
(D) hypothesizing about a set of circumstances
(E) establishing categories

4. According to the passage, Cressy would agree with which of the following statements about the organizers among the English immigrants to New England in the 1630's?

I. Most of them were clergy.
II. Some of them offered a religious explanation for their immigration.
III. They did not offer any reasons for their immigration until some time after they had immigrated.
IV. They were more likely than the average immigrant to be motivated by material considerations.

(A) I only
(B) II only
(C) II and III only
(D) I, III, and IV only
(E) II, III, and IV only

5.The passage suggests that the majority of those English people who had immigrated to America by the late seventeenth century were
(A) clergy
(B) young children
(C) organized in families
(D) skilled in crafts
(E) illiterate

Traditionally, pollination by wind has been viewed as a reproductive process marked by random events in which the vagaries of the wind are compensated for by the generation of vast quantities of pollen, so that the ultimate production of new seeds is assured at the expense of producing much more pollen than is actually used. Because the potential hazards pollen grains are subject to as they are transported over long distances are enormous, wind-pollinated plants have, in the view above, compensated for the ensuing loss of pollen through happenstance by virtue of producing an amount of pollen that is one to three orders of magnitude greater than the amount produced by species pollinated by insects.

However, a number of features that are characteristic of wind-pollinated plants reduce pollen waste. For example, many wind-pollinated species fail to release pollen when wind speeds are low or when humid conditions prevail. Recent studies suggest another way in which species compensate for the inefficiency of wind pollination. These studies suggest that species frequently take advantage of the physics of pollen motion by generating specific aerodynamic environments within the immediate vicinity of their female reproductive organs. It is the morphology of these organs that dictates the pattern of airflow disturbances through which pollen must travel. The speed and direction of the airflow disturbances can combine with the physical properties of a species' pollen to produce a species-specific pattern of pollen collision on the surfaces of female reproductive organs. Provided that these surfaces are strategically located, the consequences of this combination can significantly increase the pollen-capture efficiency of a female reproductive organ.

A critical question that remains to be answered is whether the morphological attributes of the female reproductive organs of wind-pollinated species are evolutionary adaptations to wind pollination or are merely fortuitous. A complete resolution of the question is as yet impossible since adaptation must be evaluated for each species within its own unique functional context. However, it must be said that, while evidence of such evolutionary adaptations does exist in some species, one must be careful about attributing morphology to adaptation. For example, the spiral arrangement of scale-bract complexes on ovule-bearing pine cones, where the female reproductive organs of conifers are located, is important to the production of airflow patterns that spiral over the cone's surfaces, thereby passing airborne pollen from one scale to the next. However, these patterns cannot be viewed as an adaptation to wind pollination because the spiral arrangement occurs in a number of non-wind-pollinated plant lineages and is regarded as a characteristic of vascular plants, of which conifers are only one kind, as a whole. Therefore, the spiral arrangement is not likely to be the result of a direct adaptation to wind pollination.

(453 words)

6.The author of the passage is primarily concerned with discussing

(A) the current debate on whether the morphological attributes of wind-pollinated plants are evolutionary adaptations

(B) the kinds of airflow patterns that permit wind-pollinated plants to capture pollen most efficiently

(C) the ways in which the reproductive processes of wind-pollinated plants are controlled by random events

(D) a recently proposed explanation of a way in which wind-pollinated plants reduce pollen waste

(E) a specific morphological attribute that permits one species of wind-pollinated plant to capture pollen

7. According to the passage, the "aerodynamic environments" mentioned in the second paragraph, when they are produced, are primarily determined by the

(A) presence of insects near the plant

(B) physical properties of the plant's pollen

(C) shape of the plant's female reproductive organs

(D) amount of pollen generated by the plant

(E) number of seeds produced by the plant

8. The passage suggests that the recent studies cited in the second paragraph have <u>not</u> done which of the following?

(A) Made any distinctions between different species of wind-pollinated plants.

(B) Considered the physical properties of the pollen that is produced by wind-pollinated plants.

(C) Indicated the general range within which plant-generated airflow disturbances are apt to occur.

(D) Included investigations of the physics of pollen motion and its relationship to the efficient capture of pollen by the female reproductive organs of wind-pollinated plants.

(E) Demonstrated that the morphological attributes of the female reproductive organs of wind-pollinated plants are usually evolutionary adaptations to wind pollination.

9. It can be inferred from the passage that the claim that the spiral arrangement of scale-bract complexes on an ovule-bearing pine cone is an adaptation to wind pollination would be more convincing if which of the following were true?

(A) Such an arrangement occurred only in wind-pollinated plants.

(B) Such an arrangement occurred in vascular plants as a whole.

(C) Such an arrangement could be shown to be beneficial to pollen release.

(D) The number of bracts could be shown to have increased over time.

(E) The airflow patterns over the cone's surfaces could be shown to be produced by such arrangements.

Isadora Duncan's masterly writings on the dance reveal the depth of her determination to create a lyric form of the art which was free of characterization, storytelling, and the theatrical exhibition of skills. She wished to discard the traditional methods and established vocabularies of such dance forms as ballet and to explore the internal sources of human expressiveness. She shunned bodily ornamentation and strove to use only the natural movements of her body, undistorted by acrobatic exaggeration and stimulated only by internal compulsion. In her recitals Duncan danced to the music of Beethoven, Wagner, and Gluck, among others, but, contrary to popular belief, she made no attempt to visualize or to interpret the music; rather, she simply relied on it to provide the inspiration for expressing inner feelings through movement.

(130 words)

10.The author implies that Duncan relied on music in her recitals in order to

(A) interpret musical works solely by means of natural body movements

(B) foster the illusion that music serves as an inspiration for the dance

(C) inspire the expression of inner feeling when she danced

(D) validate the public belief that music inspires the expression of feeling through movement

(E) counter the public belief that she made no attempt to visualize music

Exercise 27

The more that is discovered about the intricate organization of the nervous system, the more it seems remarkable that genes can successfully specify the development of that system. Human genes contain too little information even to specify which hemisphere of the brain each of a human's 10^{10} neurons should occupy, let alone the hundreds of connections that each neuron makes. For such reasons, we can assume that there must be an important random factor in neural development, and in particular, that errors must and do occur in the development of all normal brains.

(93 words)

1. Which of the following best describes the organization of the paragraph?
   (A) A specific case is presented, its details are analyzed, and a conclusion is drawn from it.
   (B) A discovery is announced, its most significant application is discussed, and possibilities for the future are suggested.
   (C) A generalization is made, specific situations in which it is applicable are noted, and problems with it are suggested.
   (D) An observation is made, specifics are provided to support it, and a generalization is derived.
   (E) A hypothesis is presented, its implications are clarified, and applications of it are discussed.

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Some recent historians have argued that life in the British colonies in America from approximately 1763 to 1789 was marked by internal conflicts among colonists. Inheritors of some of the viewpoints of early twentieth-century Progressive historians such as Beard and Becker, these recent historians have put forward arguments that deserve evaluation.

The kind of conflict most emphasized by these historians is class conflict. Yet with the Revolutionary War dominating these years, how does one distinguish class conflict within that larger conflict? Certainly not by the side a person supported. Although many of these historians have accepted the earlier assumption that Loyalists represented an upper class, new evidence indicates that Loyalists, like rebels, were drawn from all socioeconomic classes. (It is nonetheless probably true that a larger percentage of the well-to-do joined the Loyalists than joined the rebels.) Looking at the rebel side, we find little evidence for the contention that lower-class rebels were in conflict with upper-class rebels. Indeed, the war effort against Britain tended to suppress class conflicts. Where it did not, the disputing rebels of one or another class usually became Loyalists. Loyalism thus operated as a safety valve to remove socioeconomic discontent that existed among the rebels. Disputes occurred, of course, among those who remained on the rebel side, but the extraordinary social mobility of eighteenth-century American society (with the obvious exception of slaves) usually prevented such disputes from hardening along class lines. Social structure was in fact so fluid --- though recent statistics suggest a narrowing of economic opportunity as the latter half of the century progressed --- that to talk about social classes at all requires the use of loose economic categories such as rich, poor, and middle class, or eighteenth-century designations like "the better sort." Despite these vague categories, one should not claim unequivocally that hostility between recognizable classes cannot be legitimately observed. Outside of New York, however, there were very few instances of openly expressed class antagonism.

Having said this, however, one must add that there is much evidence to support the further claim of recent historians that sectional conflicts were common between 1763 and 1789. The "Paxton Boys" incident and the Regulator movement are representative examples of the widespread, and justified, discontent of western settlers against colonial or state governments dominated by eastern interests. Although undertones of class conflict existed beneath such hostility, the opposition was primarily geographical. Sectional conflict ---which also existed between North and South ---deserves further investigation.

In summary, historians must be careful about the kind of conflict they emphasize in eighteenth-century America. Yet those who stress the achievement of a general consensus among the colonists cannot fully understand that consensus without understanding the conflicts that had to be overcome or repressed in order to reach it.

(461 words)

2.The author most likely refers to "historians such as Beard and Becker" in the first paragraph in order to

(A) isolate the two historians whose work is most representative of the viewpoints of Progressive historians

(B) emphasize the need to find connections between recent historical writing and the work of earlier historians

(C) make a case for the importance of the views of the Progressive historians concerning eighteenth-century American life

(D) suggest that Progressive historians were the first to discover the particular internal conflicts in eighteenth-century American life mentioned in the passage

(E) point out historians whose views of history anticipated some of the views of the recent historians mentioned in the passage

3.According to the passage, Loyalism during the American Revolutionary War served the function of

(A) eliminating the disputes that existed among those colonists who supported the rebel cause

(B) drawing upper, as opposed to lower, socio-economic classes away from the rebel cause

(C) tolerating the kinds of socioeconomic discontent that were not allowed to exist on the rebel side

(D) channeling conflict that existed within a socio-economic class into the war effort against the rebel cause

(E) absorbing members of socioeconomic groups on the rebel side who felt themselves in contention with members of other socio-economic groups

For the following question, consider each of the choices separately and select all that apply

4. The passage suggests that the author would be likely to agree with which of the following statements about the social structure of eighteenth-century American society?

A It allowed greater economic opportunity than it did social mobility.

B It permitted greater economic opportunity prior to 1750 than after 1750.

C It did not contain rigidly defined socioeconomic divisions.

5.The author suggests which of the following about the representativeness of colonial or state governments in America from 1763 to 1789 ?

(A) The governments inadequately represented the interests of people in western regions.

(B) The governments more often represented class interests than sectional interests.

(C)The governments were less representative than they had been before 1763 .

(D)The governments were dominated by the interests of people of an upper socioeconomic class.

(E) The governments of the northern colonies were less representative than were the governments of the southern colonies.

Despite a dramatic increase in the number of people riding bicycles for recreation in Parkville. a recent report by the Parkville Department of Transportation shows that the number of accidents involving bicycles has decreased for the third consecutive year.

6. Which of the following, if true during the last three years, best reconciles the apparent discrepancy in the facts above?

(A) The Parkville Department of Recreation confiscated abandoned bicycles and sold them at auction to any interested Parkville residents.

(B) Increased automobile and bus traffic in Parkville has been the leading cause of the most recent increase in automobile accidents.

(C) Because of the local increase in the number of people bicycling for recreation. many out -of -town bicyclists ride in the Parkville area.

(D) The Parkville Police Department enforced traffic rules for bicycle riders much more vigorously and began requiring recreational riders to pass a bicycle safety course.

(E) The Parkville Department of Transportation canceled a program that required all bicycles to be inspected and registered each year.

The Earth's magnetic field is generated as the molten iron of the Earth's outer core revolves around its solid inner core; when surges in the molten iron occur, magnetic tempests are created. At the Earth's surface, these tempests can be detected by changes in the strength of the Earth's magnetic field. For reasons not fully understood, the field itself reverses periodically every million years or so.

Clearly, geophysicists who seek to explain and forecast changes in the field must understand what happens in the outer core. Unlike meteorologists, however, they cannot rely on observations made in their own lifetimes. Whereas atmospheric storms arise in a matter of hours and last for days, magnetic tempests develop over decades and persist for centuries.

(121 words)

7.In the passage, the author is primarily concerned with

(A) analyzing a complicated scientific phenomenon and its impact on the Earth's surface features

(B) describing a natural phenomenon and the challenges its study presents to researchers

(C) discussing a scientific field of research and the gaps in researchers' methodological approaches to it

(D) comparing two distinct fields of physical science and the different research methods employed in each

(E) proposing an explanation for a geophysical phenomenon and an experiment that could help confirm that explanation

8. Select the sentence in the passage that implies the reason why geophysicists seeking to explain magnetic tempests ought to conduct research on the Earth's outer core.

In *The Women of Mexico City, 1796-1857*, Sylvia Marina Arrom argues that the status of women in Mexico City improved during the nineteenth century. According to Arrom, households headed by females and instances of women working outside the home were much more common than scholars have estimated; efforts by the Mexican government to encourage female education resulted in increased female literacy; and influential male writers wrote pieces advocating education, employment, and increased family responsibilities for women, while deploring women's political and marital inequality. Mention of the fact that the civil codes of 1870 and 1884 significantly advanced women's rights would have further strengthened Arrom's argument.

Arrom does not discuss whether women's improved status counteracted the effects on women of instability in the Mexican economy during the nineteenth century. However, this is not so much a weakness in her work as it is the inevitable result of scholars' neglect of this period. Indeed, such gaps in Mexican history are precisely what make Arrom's pioneering study an important addition to Latin American women's history. (172 words)

9. It can be inferred from the passage that Arrom would agree with which of the following assertions?
   (A) Efforts by the Mexican government to encourage education for women during the nineteenth century were hampered by the economic instability of that period.
   (B) The most significant advances in the rights of Mexican women during the nineteenth century occurred prior to 1857.
   (C) Improvements in the status of women in Mexico City during the nineteenth century were accompanied by similar improvements in the status of women in other large Latin American cities.
   (D) Scholars have in the past accorded the most significance to nineteenth-century Mexican literature that supported the status quo in women's political and marital rights.
   (E) Scholars have in the past underestimated the number of households headed by females in Mexico City.

10. Which of the following best describes the author's attitude toward Arrom's work?
   (A) Uncritical approval
   (B) Enthusiasm tempered by minor reservations
   (C) Praise for her thesis, despite skepticism regarding the sources of her evidence
   (D) Reluctant acceptance, despite lingering doubts regarding the accuracy of her thesis
   (E) Rejection, despite admiration for her attempt to break new ground in a hitherto neglected field

Exercise 28

For women feminist literary critic, the subjectivity versus objectivity, or critic-as-artist-or-scientist, debate has special political significance, and her definition will court special risks whichever side of the issue it favors. If she defines feminist criticism as objective and scientific, the definition precludes the critic-as-artist approach and may impede accomplishment of the utilitarian political objectives of those who seek to change the academic establishment. If she defines feminist criticism as creative and intuitive, privileged as art, then her work becomes vulnerable to the prejudices of stereotypic ideas about the ways in which women think, and will be dismissed by much of the academic establishment.

These questions are political in the sense that the debate over them will inevitably be less an exploration of abstract matters in a spirit of disinterested inquiry than an academic power struggle in which the careers and professional fortunes of many women scholars -- only now entering the academic profession in substantial numbers -- will be at stake, and with them the chances for a distinctive contribution to humanistic understanding, a contribution that might be an important influence against sexism in our society.

(186 words)

For the following question, consider each of the choices separately and select all that apply

1. The author specifically mentions all of the following as difficulties that particularly affect women who are theoreticians of feminist literary criticism

A tendency of a predominantly male academic establishment to form preconceptions about women

B limitations that are imposed when criticism is defined as objective and scientific

C likelihood that the work of a woman theoretician who claims the privilege of art will be viewed with prejudice by some academics

2.Which of the following is presented by the author in support of the suggestion that there is stereotypic thinking among members of the academic establishment?

(A) A distinctively feminist contribution to humanistic understanding could work against the influence of sexism among members of the academic establishment.

(B) Women who define criticism as artistic may be seen by the academic establishment as being incapable of critical thinking.

(C) The debate over the role of the literary critic is often seen as a political one.

(D) Women scholars are only now entering academia in substantial numbers.

(E) The woman who is a critic is forced to construct a theory of literary criticism.

3 .It can be inferred that the author would define as " political" questions (in the second paragraph) that

(A) are contested largely through contentions over power

(B) are primarily academic in nature and open to abstract analysis

(C) are not in themselves important

(D) cannot be resolved without extensive debate

(E) will be debated by both men and women

What causes a helix in nature to appear with either a dextral("right-handed, "or clockwise) twist or a sinistral ("left-handed," or counterclockwise) twist is one of the most intriguing puzzles in the science of form. Most spiral-shaped snail species are predominantly dextral. But at one time, handedness (twist direction of the shell) was equally distributed within some snail species that have become predominantly dextral or, in a few species, predominantly sinistral. What mechanisms control handedness and keep left-handedness rare?

It would seem unlikely that evolution should discriminate against sinistral snails if sinistral and dextral snails are exact mirror images, for any disadvantage that a sinistral twist in itself could confer on its possessor is almost inconceivable. But left- and right-handed snails are not actually true mirror images of one another. Their shapes are noticeably different. Sinistral rarity might, then, be a consequence of possible disadvantages conferred by these other concomitant structural features. In addition, perhaps left- and right-handed snails cannot mate with each other, having incompatible twist directions. Presumably an individual of the rarer form would have relative difficulty in finding a mate of the same hand, thus keeping the rare form rare or creating geographically separated right- and left-handed populations.

But this evolutionary mechanism combining dissymmetry, anatomy, and chance does not provide an adequate explanation of why right-handedness should have become predominant. It does not explain, for example, why the infrequent unions between snails of opposing hands produce fewer offspring of the rarer than the commoner form in species where each parent contributes equally to handedness. Nor does it explain why, in a species where one parent determines handedness, a brood is not exclusively right- or left-handed when the offspring would have the same genetic predisposition. In the European pond snail *Lymnaea peregra*, a predominantly dextral species whose handedness is maternally determined, a brood might be expected to be exclusively right- or left-handed—and this often occurs. However, some broods possess a few snails of the opposing hand, and in predominantly sinistral broods, the incidence of dextrality is surprisingly high.

Here, the evolutionary theory must defer to a theory based on an explicit developmental mechanism that can favor either right- or left-handedness. In the case of *Lymnaea peregra*, studies indicate that a dextral gene is expressed during egg formation; i.e., before egg fertilization, the gene produces a protein, found in the cytoplasm of the egg, that controls the pattern of cell division and thus handedness. In experiments, an injection of cytoplasm from dextral eggs changes the pattern of sinistral eggs, but an injection from sinistral eggs does not influence dextral eggs. One explanation for the differing effects is that all *Lymnaea peregra* eggs begin left-handed but most switch to being right-handed. Thus, the path to a solution to the puzzle of handedness in all snails appears to be as twisted as the helix itself.

(472 words)

4. The second paragraph of the passage is primarily concerned with offering possible reasons why
   (A) it is unlikely that evolutionary mechanisms could discriminate against sinistral snails
   (B) sinistrality is relatively uncommon among snail species
   (C) dextral and sinistral populations of a snail species tend to intermingle
   (D) a theory based on a developmental mechanism inadequately accounts for the predominance of dextrality across snail species
   (E) dextral snails breed more readily than sinistral snails, even within predominantly sinistral populations

5. In describing the "evolutionary mechanism" (the first sentence of the third paragraph), the author mentions which of the following?
   (A) The favorable conditions for nurturing new offspring
   (B) The variable environmental conditions that affect survival of adult snails
   (C) The availability of potential mates for breeding
   (D) The structural identity of offspring to parents of the same hand
   (E) The frequency of unions between snails of different species

6. According to the passage, which of the following is true of *Lymnaea peregra*?
   (A) Handedness within the species was at one time equally distributed between left and right.
   (B) Under laboratory conditions, dextral eggs from *Lymnaea peregra* can be artificially induced to develop into sinistral snails.
   (C) Broods of *Lymnaea peregra* are, without variation, exclusively sinistral or dextral.
   (D) Handedness in *Lymnaea peregra* offspring is determined by two parents together.
   (E) fewer sinistral offspring in dextral broods than dextral offspring in sinistral broods

7. Which of the following accurately describes the relationship between the evolutionary and developmental theories discussed in the passage?
   (A) Although the two theories reach the same conclusion, each is based on different assumptions.
   (B) They present contradictory explanations of the same phenomenon.
   (C) The second theory accounts for certain phenomena that the first cannot explain.
   (D) The second theory demonstrates why the first is valid only for very unusual, special cases.
   (E) They are identical and interchangeable in that the second theory merely restates the first in less technical terms.

Martin Luther King's role in the movement protesting the war in Vietnam appears to require little explanation, since he was the foremost advocate of nonviolence of his time. But King's stance on the Vietnam War cannot be explained in terms of pacifism alone. After all, he was something of a latecomer to the antiwar movement, even though by 1965 he was convinced that the role of the United States in the war was indefensible. Why then the two years that passed before he translated his private misgivings into public dissent? Perhaps he believed that he could not criticize American foreign policy without endangering the support for civil rights that he had won from the federal government. (116 words)

8. According to the passage, the delay referred to in the passage is perhaps attributable to which of the following?
   (A) King's ambivalence concerning the role of the United States in the war in Vietnam
   (B) King's attempts to consolidate support for his leadership within the civil rights movement
   (C) King's desire to keep the leadership of the civil rights movement distinct from that of the antiwar movement
   (D) King's desire to draw support for the civil rights movement from the leadership of the antiwar movement
   (E) King's reluctance to jeopardize federal support for the civil rights movement

An economist concluded that Kregg Company deliberately discriminated against people with a history of union affiliation in hiring workers for its new plant. The economist's evidence is that, of the 1,500 people hired to work at the new plant, only 100 had ever belonged to a labor union, whereas in Kregg Company's older plants, a much higher proportion of workers have a history of union affiliation.

9. Which of the following is an assumption on which the economist's argument depends?

(A) None of the people with a history of union affiliation who were hired to work at the new plant were union organizers.

(B) Applicants for jobs at the new plant were not asked by Kregg's recruiters whether they had ever belonged to a labor union.

(C) In the plants of some of Kregg's competitors, the workforce consists predominantly of union members.

(D) The company believes that the cost of running the new plant will be lower if labor unions are not represented in the workforce.

(E) The pool of potential candidates for jobs at the new plant included some people, in addition to those Kregg hired, with a history of union affiliation.

Quantum mechanics is a highly successful theory: it supplies methods for accurately calculating the results of diverse experiments, especially with minute particles. The predictions of quantum mechanics, however, give only the probability of an event, not a deterministic statement of whether or not the event will occur. Because of this probabilism, Einstein remained strongly dissatisfied with the theory throughout his life, though he did not maintain that quantum mechanics is wrong. Rather, he held that it is incomplete: in quantum mechanics the motion of a particle must be described in terms of probabilities, he argued, only because some parameters that determine the motion have not been specified. Einstein's ideas have been tested by experiments performed since his death, and as most of these experiments support traditional quantum mechanics, Einstein's approach is almost certainly erroneous.

(134 words)

10. It can be inferred from the passage that the author's conclusion that Einstein's approach is "erroneous" might have to be modified because

(A) it is theoretically possible to generate plausible theories with hidden parameters within them

(B) some experimental tests of Einstein's theory do not disconfirm the hidden-parameter theory of quantum mechanics

(C) it is possible for a theory to have hidden parameters and yet be probabilistic

(D) traditional quantum mechanics has not yet been used to analyze all of the phenomena to which it could be applied

(E) there are too many possible hidden parameters to develop meaningful tests of hidden-parameter theories

Exercise 29

Analyzing the physics of dance can add fundamentally to a dancer's skill. Although dancers seldom see themselves totally in physical terms -- as body mass moving through space under the influence of well-known forces and obeying physical laws -- neither can they afford to ignore the physics of movement. Some movements involving primarily vertical or horizontal motions of the body as a whole, in which rotations can be ignored, can be studied using simple equations of linear motion in three dimensions. However, rotational motions require more complex approaches that involve analyses of the way the body's mass is distributed, the axes of rotation involved in different types of movement, and the sources of the forces that produce the rotational movement. (120 words)

1.The primary purpose of the passage is to

(A) initiate a debate over two approaches to analyzing a field of study

(B) describe how one field of knowledge can be applied to another field

(C) point out the contradictions between two distinct theories

(D) Define and elaborate on an accepted scientific principle

(E) discuss the application of a new theory within a new setting

For the following question, consider each of the choices separately and select all that apply

2.The author mentions all of the following as contributing to an understanding of the physics of dance

A analyses of the way in which the body's mass is distributed

B equations of linear motion in three dimensions

C analyses of the sources that produce rotational motions

Hastings’ contracture is a disorder of the connective tissue in one or both hands, most commonly causing loss of mobility. A survey of thousands of medical-insurance claims found that over 30 percent of people who had one hand operated on for Hastings' contracture underwent surgery a second time for this disorder within three years. Clearly, therefore, a single surgical treatment of Hastings' contracture is often ineffective at providing long-term correction of the disorder.

3. Which of the following, if true, most seriously weakens the argument?

(A) The medical-insurance claims did not specie whether the surgery was on the patient's right or left hand.

(B) The surgical techniques used to treat Hastings' contracture are identical to those used successfully to treat certain work-related injuries to the hand.

(C) A separate survey found that 90 percent of patients operated on for Hastings' contracture report increased hand mobility within one month after the surgery.

(D) All of the patients in the survey were required by their insurance companies to seek a second opinion from a qualified surgeon before undergoing the operation.

(E) Many people who have Hastings' contracture choose to tolerate its effects rather than undergo the risks of surgery.

Many organisms are capable of altering their habitat significantly, sometimes limiting their own growth. The influence of the biological component of an ecosystem is often greater in fresh waters that in marine or terrestrial systems, because of the small size of many freshwater bodies. Many of the important effects of organisms are related to their physiology, especially growth and respiration. By their growth many species can deplete essential nutrients within the system, thus limiting their own growth or that of other species. Lund has demonstrated that in Lake Windermere the alga *Asterionella* is unable to grow in conditions that it itself has created. Once a year, in the spring, this plant starts to grow rapidly in the lake, using up so much silica from the water that by late spring there is no longer enough to maintain its own growth. The population decreases dramatically as a result. (147 words)

4. Select the sentence in the passage that indicates certain causes of the alteration of organisms to their habitat.

The Fourteenth Amendment to the United States Constitution, ratified in 1868, prohibits state governments from denying citizens the "equal protection of the laws." Although precisely what the framers of the amendment meant by this equal protection clause remains unclear, all interpreters agree that the framers' immediate objective was to provide a constitutional warrant for the Civil Rights Act of 1866, which guaranteed the citizenship of all persons born in the United States and subject to United States jurisdiction. This declaration, which was echoed in the text of the Fourteenth Amendment, was designed primarily to counter the Supreme Court's ruling in *Dred Scott v. Sandford* that Black people in the United States could be denied citizenship. The act was vetoed by President Andrew Johnson, who argued that the Thirteenth Amendment, which abolished slavery, did not provide Congress with the authority to extend citizenship and equal protection to the freed slaves. Although Congress promptly overrode Johnson's veto, supporters of the act sought to ensure its constitutional foundations with the passage of the Fourteenth Amendment.

The broad language of the amendment strongly suggests that its framers were proposing to write into the Constitution not a laundry list of specific civil rights but a principle of equal citizenship that forbids organized society from treating any individual as a member of an inferior class. Yet for the first eight decades of the amendment’s existence, the Supreme Court’s interpretation of the amendment betrayed this ideal of equality. In the Civil Rights Cases of 1883, for example, the Court invented the “state action” limitation, which asserts that “private” decisions by owners of public accommodations and other commercial businesses to segregate their facilities are insulated from the reach of the Fourteenth Amendment’s guarantee of equal protection under the law.

After the Second World War, a judicial climate more hospitable to equal protection claims culminated in the Supreme Court’s ruling in *Brown v. Board of Education* that racially segregated schools violated the equal protection clause of the Fourteenth Amendment.

(330 words)

5.The author implies that the Fourteenth Amendment might not have been enacted if

(A) Congress' authority with regard to legislating civil rights had not been challenged

(B) the framers had anticipated the Supreme Court's ruling in *Brown v. Board of Education*

(C) the framers had believed that it would be used in deciding cases of discrimination involving non-racial groups

(D) most state governments had been willing to protect citizens' civil rights

(E) its essential elements had not been implicit in the Thirteenth Amendment

6.According to the passage, which of the following most accurately indicates the sequence of the events listed below ?

I. Civil Rights Act of 1866
II. *Dred Scott v. Sandford*
III. Fourteenth Amendment
IV. Veto by President Johnson

(A) I, II, III, IV
(B) I, IV, II, III
(C) I, IV, III, II
(D) II, I, IV, III
(E) III, II, I, IV

7. The author's position regarding the intent of the framers of the Fourteenth Amendment would be most seriously undermined if which of the following were true?

(A) The framers had anticipated state action limitations as they are described in the passage.

(B) The framers had merely sought to prevent discriminatory acts by federal officials.

(C) The framers were concerned that the Civil Rights Act of 1866 would be overturned by the Supreme Court.

(D) The framers were aware that the phrase "equal protection of the laws" had broad implications.

(E) The framers believed that racial as well as non-racial forms of discrimination were unacceptable.

8. The passage suggests that the principal effect of the state action limitation was to

(A) allow some discriminatory practices to continue unimpeded by the Fourteenth Amendment

(B) influence the Supreme Court's ruling in *Brown v. Board of Education*

(C) provide expanded guidelines describing prohibited actions

(D) prohibit states from enacting laws that violated the intent of the Civil Rights Act of 1866

(E) shift to state governments the responsibility for enforcement of laws prohibiting discriminatory practices

It has long been known that during an El Nino, two conditions exist: (1) unusually warm water extends along the eastern Pacific, principally along the coasts of Ecuador and Peru, and (2) winds blow from the west into the warmer air rising over the warm water in the east. These winds tend to create a feedback mechanism by driving the warmer surface water into a "pile" that blocks the normal upwelling of deeper, cold water in the east and further warms the eastern water, thus strengthening the wind still more. The contribution of the recent model is to show that the winds of an El Nino, which raise sea level in the cast, simultaneously send a signal to the west lowering sea level. According to the model, that signal is generated as a negative Rossby wave, a wave of depressed, or negative, sea level, that moves westward parallel to the equator at 25 to 85 kilometers per day. Taking months to traverse the Pacific, Rossby waves march to the western boundary of the Pacific basin, which is modeled as a smooth wall but in reality consists of quite irregular island chains, such as the Philippines and Indonesia.

For the following question, consider each of the choices separately and select all that apply

9. It can be inferred from the passage that which of the following would result fairly immediately from the cessation of the winds of an El Nino?

A Negative Rossby waves would cease to be generated in the eastern Pacific.
B The sea level in the eastern Pacific would fall.
C The surface water in the eastern Pacific would again be cooled by being mixed with deep water.

10. Which of the following, if true, would most seriously undermine the validity of the model of El Nino that is presented in the passage?

(A) During some years El Nino extends significantly farther along the coasts of Ecuador and Peru than during other years.
(B) During periods of unusually cool temperatures along the eastern Pacific, an El Nino is much colder than normal.
(C) The normal upwelling of cold water in the eastern Pacific depends much more on the local characteristics of the ocean than on atmospheric conditions.
(D) The variations in the time it takes Rossby waves to cross the Pacific depend on the power of the winds that the waves encounter.
(E) The western boundary of the Pacific basin is so irregular that it impedes most coastal Kelvin waves from heading eastward.

Exercise 30

Sex-defined protective laws have often been based on stereotypical assumptions concerning women's needs and abilities, and employers have frequently used them as legal excuses for discriminating against women. After the Second World War, for example, businesses and government sought to persuade women to vacate jobs in factories, thus making room in the labor force for returning veterans. The revival or passage of state laws limiting the daily or weekly work hours of women conveniently accomplished this. Employers had only to declare that overtime hours were a necessary condition of employment or promotion in their factory, and women could be quite legally fired, refused jobs, or kept at low wage levels, all in the name of "protecting" their health. At the same time, even the most well- intentioned lawmakers, courts, and employers have often been blind to the real needs of women. The lawmakers and the courts continue to permit employers to offer employee health insurance plans that cover all known human medical disabilities except those relating to pregnancy and childbirth.

(170 words)

1. According to the author, which of the following resulted from the passage or revival of state laws limiting the work hours of women workers?

(A) Women workers were compelled to leave their jobs in factories.

(B) Many employers had difficulty in providing jobs for returning veterans.

(C) Many employers found it hard to attract women workers.

(D) The health of most women factory workers improved.

(E) Employment practices that addressed the real needs of women workers became common.

2. The author places the word "protecting" in quotation marks most likely in order to suggest that

(A) she is quoting the actual wording of the laws in question

(B) the protective nature of the laws in question should not be overlooked

(C) protecting the health of workers is important to those who support protective labor laws

(D) the laws in question were really used to the detriment of women workers, despite being overtly protective in intent

(E) the health of workers is not in need of protection, even in jobs where many hours of overtime work are required

A society can achieve a fair distribution of resources only under conditions of economic growth. There can be no economic growth unless the society guarantees equality of economic opportunity to all of its citizens. Equality of economic opportunity cannot be guaranteed unless a society's government actively works to bring it about.

3. If the statements given are true, it can be properly concluded from them that

(A) no government can achieve a fair distribution of resources under conditions of economic growth

(B) all societies that guarantee equality of economic opportunity to all of their members are societies that distribute resources fairly

(C) a society can achieve a fair distribution of resources only if its government actively works to bring about equality of economic opportunity

(D) there can be no economic growth in a society unless that society guarantees a fair distribution of resources

(E) some societies that experience economic growth fail to guarantee equality of opportunity to all of their citizens

The sweep of narrative in A. N. Wilson's biography of C. S. Lewis is impressive and there is much that is acute and well argued. But much in this work is careless and unworthy of its author. Wilson, a novelist and an accomplished biographer, has failed to do what any writer on such a subject as Lewis ought to do, namely work out a coherent view of how the various literary works by the subject are to be described and commented on. Decisions have to be made on what to look at in detail and what to pass by with just a mention. Wilson has not thought this problem out. For instance, *Till We Have Faces*, Lewis' treatment of the Eros and Psyche story and one of his best-executed and most moving works, is merely mentioned by Wilson, though it illuminates Lewis' spiritual development, whereas Lewis' minor work *Pilgrim's Regress* is looked at in considerable detail. (156 words)

For the following question, consider each of the choices separately and select all that apply

4.The author of the passage implies that Wilson's examination of *Pilgrim's Regress*

A was disproportionately long relative to the amount of effort Lewis devoted to writing *Pilgrim's Regress*

B was more extensive than warranted because of the relative unimportance of *Pilgrim's Regress*

C is not as coherent as his treatment of *Till We Have Faces*

5.The author of the passage would be most likely to agree with which of the following statements regarding *Till We Have Faces*?

(A) It is an improvement over the Eros and Psyche story on which it is based.

(B) It illustrated Lewis' attempt to involve his readers emotionally in the story of Eros and Psyche.

(C) It was more highly regarded by Wilson than by Lewis himself.

(D) It is one of the outstanding literary achievements of Lewis' career.

(E) It is probably one of the most popular of Lewis' works.

It has been known for many decades that the appearance of sunspots is roughly periodic, with an average cycle of eleven years. Moreover, the incidence of solar flares and the flux of solar cosmic rays, ultraviolet radiation, and x-radiation all vary directly with the sunspot cycle. But after more than a century of investigation, the relation of these and other phenomena, known collectively as the solar-activity cycle, to terrestrial weather and climate remains unclear. For example, the sunspot cycle and the allied magnetic-polarity cycle have been linked to periodicities discerned in records of such variables as rainfall, temperature, and winds. Invariably, however, the relation is weak, and commonly of dubious statistical significance.

Effects of solar variability over longer terms have also been sought. The absence of recorded sunspot activity in the notes kept by European observers in the late seventeenth and early eighteenth centuries has led some scholars to postulate a brief cessation of sunspot activity at that time (a period called the Maunder minimum). The Maunder minimum has been linked to a span of unusual cold in Europe extending from the sixteenth to the early nineteenth centuries. The reality of the Maunder minimum has yet to be established, however, especially since the records that Chinese naked-eye observers of solar activity made at that time appear to contradict it. Scientists have also sought evidence of long-term solar periodicities by examining indirect climatological data, such as fossil records of the thickness of ancient tree rings. These studies, however, failed to link unequivocally terrestrial climate and the solar-activity cycle, or even to confirm the cycle's past existence.

6. It can be inferred from the passage that studies attempting to use tree-ring thickness to locate possible links between solar periodicity and terrestrial climate are based on which of the following assumptions?

(A) The solar-activity cycle existed in its present form during the time period in which the tree rings grew.
(B) The biological mechanisms causing tree growth are unaffected by short-term weather patterns.
(C) Average tree-ring thickness varies from species to species.
(D) Tree-ring thicknesses reflect changes in terrestrial climate.
(E) Both terrestrial climate and the solar-activity cycle randomly affect tree-ring thickness.

7. According to the passage, late seventeenth and early eighteenth-century Chinese records are important for which of the following reasons?

(A) They suggest that the data on which the Maunder minimum was predicated were incorrect.
(B) They suggest that the Maunder minimum cannot be related to climate.
(C) They suggest that the Maunder minimum might be valid only for Europe.
(D) They establish the existence of a span of unusually cold weather worldwide at the time of the Maunder minimum.
(E) They establish that solar activity at the time of the Maunder minimum did not significantly vary from its present pattern.

The two claws of the mature American lobster are decidedly different from each other. The crusher claw is short and stout; the cutter claw is long and slender. This bilateral asymmetry begins to appear in the juvenile sixth stage of development. One possible explanation is that differential use of the claws determines their asymmetry; the claw that is used more becomes the crusher.

To test this hypothesis, researchers raised lobsters in the juvenile fourth and fifth stages of development in a laboratory environment in which the lobsters could manipulate oyster chips. Under these conditions, the lobsters developed asymmetric claws, half with crusher claws on the left, and half with crusher claws on the right. In contrast, when juvenile lobsters were reared in a smooth tank without the oyster chips, the majority developed two cutter claws. This unusual configuration of symmetrical cutter claws did not change when the lobsters were subsequently placed in a manipulatable environment or when they lost and regenerated one or both claws.

(165 words)

8.It can be inferred that of the two laboratory environments mentioned in the passage, the one with oyster chips was designed to

(A) prove that the presence of oyster chips was not necessary for the development of a crusher claw.

(B) prove that the relative length of time that the lobsters were exposed to the oyster-chip environment had little impact on the development of a crusher claw

(C) eliminate the environment as a possible influence in the development of a crusher claw

(D) control on which side the crusher claw develops

(E) simulate the conditions that lobsters encounter in their natural environment

9.Which of the following conditions does the passage suggest is a possible cause for the failure of a lobster to develop a crusher claw?

(A) The loss of a claw during the third or earlier stage of development

(B) The loss of a claw during the fourth or fifth stage of development

(C) The loss of a claw during the sixth stage of development

(D) Development in an environment devoid of material that can be manipulated

(E) Development in an environment that changes frequently throughout the stages of development

10. Which of the following, if true, most logically completes the passage?

Every fusion reaction releases neutrinos. To test a hypothesis about the frequency of fusion reactions in the Sun, physicists calculated the number of neutrinos the Sun would produce annually if the hypothesis were correct. From this they estimated how many neutrinos should pass through a particular location on Earth. The fact that far fewer neutrinos were counted than were predicted to pass through the location would seem to prove that the hypothesis is wrong, except that ____.

(A) the physicists, using a different method for estimating how many neutrinos should reach the location, confirmed their original estimate
(B) there are several competing hypotheses about the frequency of solar fusion reactions
(C) there is not enough energy in the Sun to destroy a neutrino once it is released
(D) the method used to count neutrinos detects no more than approximately ten percent of the neutrinos that pass through
(E) neutrinos released in the fusion reactions of other stars also reach the Earth

Exercise 31

High Towers, a company that occupies several office buildings, is considering installing new energy- efficient lightbulbs in its buildings. The new bulbs require less than half the electricity consumed by the conventional bulbs currently used to produce the same amount of light. The new bulbs also last considerably longer. It follows that by replacing old bulbs as they bum out with the new kind of bulb, High Towers would significantly reduce its overall lighting costs.

1. Which of the following, if true, most strengthens the argument given?

(A) If the new bulbs are widely adopted, as seems likely, they will be produced in large enough quantities to be offered at prices comparable to those of conventional bulbs.

(B) The utility that supplies High Towers with electricity offers discount rates to its largest customers.

(C) High Towers has recently signed a contract to occupy an additional small office building.

(D) High Towers has begun a campaign to encourage its employees to turn off lights whenever they leave a room.

(E) The company that manufactures the new bulbs has been granted a patent on the innovative technology used in the bulbs and thus has exclusive rights to manufacture them.

The defoliation of millions of acres of trees by massive infestations of gypsy moth caterpillars is a recurring phenomenon in the northeastern United States. In studying these outbreaks, scientists have discovered that affected trees fight back by releasing toxic chemicals, mainly phenols, into their foliage. These noxious substances limit caterpillars' growth and reduce the number of eggs that female moths lay. Phenols also make the eggs smaller, which reduces the growth of the following year's caterpillars. Because the number of eggs a female moth produces is directly related to her size, and because her size is determined entirely by her feeding success as a caterpillar, the trees' defensive mechanism has an impact on moth fecundity.

The gypsy moth is also subject to attack by the nucleopolyhedrosis virus, or wilt disease, a particularly important killer of the caterpillars in outbreak years. Caterpillars contract wilt disease when they eat a leaf to which the virus, encased in a protein globule, has become attached. Once ingested by a caterpillar, the protein globule dissolves, releasing thousands of viruses, or virions, that after about two weeks multiply enough to fill the entire body cavity. When the caterpillar dies, the virions are released to the outside, encased in a new protein globule synthesized from the caterpillar's tissues and ready to be picked up by other caterpillars.

Knowing that phenols, including tannins, often act by associating with and altering the activity of proteins, researchers focused on the effects on caterpillars of ingesting the virus and leaves together. They found that on tannin-rich oak leaves, the virus is considerably less effective at killing caterpillars than when it is on aspen leaves, which are lower in phenols. In general, the more concentrated the phenols in tree leaves, the less deadly the virus. Thus, while highly concentrated phenols in tree leaves reduce the caterpillar population by limiting the size of caterpillars and, consequently, the size of the female's egg cluster, these same chemicals also help caterpillars survive by disabling the wilt virus. Forest stands of red oaks, with their tannin-rich foliage, may even provide caterpillars with safe havens from disease. In stands dominated by trees such as aspen, however, incipient gypsy moth outbreaks are quickly suppressed by viral epidemics.

Further research has shown that caterpillars become virtually immune to the wilt virus as the trees on which they feed respond to increasing defoliation. The trees' own defenses raise the threshold of caterpillar vulnerability to the disease, allowing populations to grow denser without becoming more susceptible to infection. For these reasons, the benefits to the caterpillars of ingesting phenols appear to outweigh the costs. Given the presence of the virus, the trees' defensive tactic apparently has backfired.

(446 words)

2. It can be inferred from the passage that wilt disease virions depend for their survival on

(A) protein synthesized from the tissues of a host caterpillar

(B) aspen leaves with high concentrations of phenols

(C) tannin-rich oak leaves

(D) nutrients that they synthesize from gypsy moth egg clusters

(E) a rising threshold of caterpillar vulnerability to wilt disease

3.Which of the following best describes the function of the third paragraph of the passage?

(A) It resolves a contradiction between the ideas presented in the first and second paragraphs.

(B) It introduces research data to support the theory outlined in the second paragraph.

(C) It draws a conclusion from conflicting evidence presented in the first two paragraphs.

(D) It shows how phenomena described in the first and second paragraphs act in combination.

(E) It elaborates on the thesis introduced in the first paragraph after a digression in the second paragraph.

4. Select the sentence in the passage that the author uses as a supporting idea to explicate how gypsy moth caterpillars become immune to the wilt virus.

For the following question, consider each of the choices separately and select all that apply

5.Which of the following statements about gypsy moth caterpillars is supported by information presented in the passage EXCEPT?

A Differing concentrations of phenols in leaves have differing effects on the ability of the wilt virus to kill gypsy moth caterpillars.

B Female gypsy moth caterpillars stop growing after they ingest leaves containing phenols.

C The longer a gypsy moth population is exposed to wilt disease, the greater the likelihood that the gypsy moth caterpillars will become immune to the virus.

Although a historical lack of access to formal Spanish-language education initially limited the opportunities of some Chicanos to hone their skills as writers of Spanish, their bilingual culture clearly fostered an exuberant and compelling oral tradition. It has thus generally been by way of the emphasis on oral literary creativity that these Chicano writers, whose English-language works are sometimes uninspired, developed the powerful and arresting language that characterized their Spanish-language works. This Spanish-English difference is not surprising. When writing in Spanish, these authors stayed close to the spoken traditions of their communities. Works in English, however, often required the elimination of nuance or colloquialism, the adoption of a formal tone, and the adjustment of themes or ideas to satisfy the different demands of national publications. (127 words)

6.According to the author, the Chicano oral experience contributed directly to which of the following characteristics in the work of some Chicano writers?

(A) A sensitivity to and adeptness in using the spoken language

(B) A tendency to appear in national rather than regional publications

(C) A style reflecting the influence of Spanish language education

(D) A reliance on a rather formal style

(E) A capacity to appeal to a broad range of audiences

7. Which of the following best characterizes the function of the indicated portion (the last two sentences) of the passage ?

(A) They expand on an advantage mentioned in the first sentence of the passage.

(B) They outline the consequences of a limitation discussed in the first sentence of the passage.

(C) They provide explicit examples drawn from the oral and the written works mentioned in the second sentence of the passage.

(D) They explain the causes of a phenomenon mentioned in the third sentence of the passage.

(E) They limit the applicability of a generalization made in the third sentence of the passage.

In medical tomography x-rays map the human body's density variations (and hence internal organs); the information from the x-rays, transmitted through the body along many different paths, is recombined to form three-dimensional images of the body's interior. It is primarily this multiplicative increase in data obtained from the multipath transmission of signals that accounts for oceanographers' attraction to tomography.

Researchers reasoned that low-frequency sound waves, because they are so well described mathematically and because even small perturbations in emitted sound waves can be detected, could be transmitted through the ocean over many different paths and that the properties of the ocean's interior could be deduced on the basis of how the ocean altered the signals. Their initial trials were highly successful, and ocean acoustic tomography was born.

(128 words)

8.Which of the following, if presented as the first sentence of a succeeding paragraph, would most logically continue the discussion presented in the passage?

(A) Timekeeping in medical tomography must be precise because the changes in travel time caused by density fluctuations are slight.

(B) To understand how ocean acoustic tomography works, it is necessary to know how sound travels in the ocean.

(C) Ships are another possibility. but they would need to stop every 50 kilometers to lower measuring instruments.

(D) These variations amount to only about 2 to 3 percent of the average speed of sound in water, which is about 1,500 meters per second.

(E) The device used in medical tomography emits a specially coded signal, easily distinguishable from background noise

Ironically, now that photography is securely established as a fine art, many photographers find it pretentious or irrelevant to label it as such. Serious photographers variously claim to be finding, recording, impartially observing, witnessing events, exploring themselves—anything but making works of art. In the nineteenth century, photography's association with the real world placed it in an ambivalent relation to art; late in the twentieth century, an ambivalent relation exists because of the Modernist heritage in art. That important photographers are no longer willing to debate whether photography is or is not a fine art, except to proclaim that their own work is not involved with art, shows the extent to which they simply take for granted the concept of art imposed by the triumph of Modernism: the better the art, the more subversive it is of the traditional aims of art.

(142 words)

9.Which of the following adjectives best describes "the concept of art imposed by the triumph of Modernism" as the author represents it in the last sentence?

(A) Objective
(B) Mechanical
(C) Superficial
(D) Dramatic
(E) Paradoxical

Pollutants in the atmosphere can cause acid rain (rain with high acidity levels). While acid rain in itself cannot significantly affect the acidity of bodies of water into which it falls, it can greatly increase the acidity of nearby lakes by increasing the amount of decaying matter on a forest floor. A recent increase in the acidity of the water in Forest Lake, therefore, surely indicates that the rain falling nearby has become more acid.

10. Which of the following, if true, most seriously weakens the argument?
    (A) Even in areas without significant amounts of acid rain, most lakes in regions with vegetation similar to the vegetation around Forest Lake have acidity levels higher than those of other lakes.
    (B) Recent air-quality tests in the region around Forest Lake have revealed a slight increase in the amount of pollutants in the air.
    (C) Large-scale logging, which was recently begun in the forest surrounding Forest Lake, has increased the amount of decaying matter on the forest floor.
    (D) There is some disagreement among scientists about exactly how pollutants in the atmosphere cause acid rain.
    (E) Decaying matter exists on all forest floors and is an important factor in maintaining the healthy growth of the forests.

Exercise 32

The recent change to all-volunteer armed forces in the United States will eventually produce a gradual increase in the proportion of women in the armed forces and in the variety of women's assignments, but probably not the dramatic gains for women that might have been expected. This is so even though the armed forces operate in an ethos of institutional change oriented toward occupational equality and under the federal sanction of equal pay for equal work. The difficulty is that women are unlikely to be trained for any direct combat operations; a significant portion of the larger society remains uncomfortable as yet with extending equality in this direction. Therefore, for women in the military, the search for equality will still be based on functional equivalence, not identity or even similarity of task. (132 words)

For the following question, consider each of the choices separately and select all that apply

1. The passage implies that which of the following is a factor conducive to a more equitable representation of women in the United States armed forces than has existed in the past?

A The all-volunteer character of the present armed forces

B The past service records of women who had assignments functionally equivalent to men's assignments

C Restrictive past policies governing the military assignments open to women

One explanation for the tendency of animals to be more vigilant in smaller groups than in larger ones assumes that the vigilant behavior—looking up, for example—is aimed at predators. If individuals on the edge of a group are more vigilant because they are at greater risk of being captured, then individuals on average would have to be more vigilant in smaller groups, because the animals on the periphery of a group form a greater proportion of the whole group as the size of the group diminishes.

However, a different explanation is necessary in cases where the vigilant behavior is not directed at predators. J. Krebs has discovered that great blue herons look up more often when in smaller flocks than when in larger ones, solely as a consequence of poor feeding conditions. Krebs hypothesizes that the herons in smaller flocks are watching for herons that they might follow to better feeding pools, which usually attract larger numbers of the birds. (162 words)

2. It can be inferred from the passage that in species in which vigilant behavior is directed at predators, the tendency of the animals to be more vigilant in smaller groups than in larger ones would most likely be minimized if which of the following were true?

(A) The vigilance of animals on the periphery of a group always exceeded that of animals located in its interior, even when predators were not in the area.
(B) The risk of capture for individuals in a group was the same, whether they were located in the interior of the group or on its periphery.
(C) Animals on the periphery of a group tended to be less capable of defending themselves from attack by predators than animals located in the interior of the group.
(D) Animals on the periphery of a group tended to bear marks that were more distinctive to predators than animals located in the interior of the group.
(E) Animals on the periphery of a group tended to have shorter life spans than animals located in the interior of the group.

For the following question, consider each of the choices separately and select all that apply

3.The passage provides information in support of which of the following assertions EXCEPT?

A Similar behavior in different species of animals does not necessarily serve the same purpose.
B Vigilant behavior aimed at predators is seldom more beneficial to groups of animals than to individual animals.
C The avoidance of predators is more important to an animal's survival than is the quest for food.

About a century ago, the Swedish physical scientist Arrhenius proposed a law of classical chemistry that relates chemical reaction rate to temperature. According to the Arrhenius equation, chemical reaction are increasingly unlikely to occur as temperatures approach absolute zero, and at absolute zero (zero degrees Kelvin, or minus 273 degrees Celsius) reactions stop. However, recent experimental evidence reveals that although the Arrhenius equation is generally accurate in describing the kind of chemical reaction that occurs at relatively high temperatures, at temperatures closer to zero a quantum-mechanical effect known as tunneling comes into play; this effect accounts for chemical reactions that are forbidden by the principles of classical chemistry. Specifically, entire molecules can "tunnel" through the barriers of repulsive forces from other molecules and chemically react even though these molecules do not have sufficient energy, according to classical chemistry, to overcome the repulsive barrier.

The rate of any chemical reaction, regardless of the temperature at which it takes place, usually depends on a very important characteristic known as its activation energy. Any molecule can be imagined to reside at the bottom of a so-called potential well of energy. A chemical reaction corresponds to the transition of a molecule from the bottom of one potential well to the bottom of another. In classical chemistry, such a transition can be accomplished only by going over the potential barrier between the wells, the height of which remains constant and is called the activation energy of the reaction. In tunneling, the reacting molecules tunnel from the bottom of one to the bottom of another well without having to rise over the barrier between the two wells. Recently researchers have developed the concept of tunneling temperature: the temperature below which tunneling transitions greatly outnumber Arrhenius transitions, and classical mechanics gives way to its quantum counterpart.

This tunneling phenomenon at very low temperatures suggested my hypothesis about a cold prehistory of life: the formation of rather complex organic molecules in the deep cold of outer space, where temperatures usually reach only a few degrees Kelvin. Cosmic rays (high-energy protons and other particles) might trigger the synthesis of simple molecules, such as interstellar formaldehyde, in dark clouds of interstellar dust. Afterward complex organic molecules would be formed, slowly but surely, by means of tunneling. After I offered my hypothesis, Hoyle and Wickramasinghe argued that molecules of interstellar formaldehyde have indeed evolved into stable polysaccharides such as cellulose and starch. Their conclusions, although strongly disputed, have generated excitement among investigators such as myself who are proposing that the galactic clouds are the places where the prebiological evolution of compounds necessary to life occurred.

4.According to the passage, classical chemical reactions and tunneling reactions are alike in which of the following ways?

(A) In both types of reactions, reacting molecules have to rise over the barrier between the two wells.

(B) In both types of reactions, a transition is made from the bottom of one potential well to the bottom of another.

(C) In neither type of reaction does the height of the barrier between the wells remain constant.

(D) In neither type of reaction does the rate of a chemical reaction depend on its activation energy.

(E) In both types of reactions, reacting molecules are able to go through the barrier between the two wells.

5.The author's hypothesis concerning the cold prehistory of life would be most weakened if which of the following were true?

(A)Cosmic rays are unlikely to trigger the formation of simple molecules.

(B)Tunneling occurs only in a narrow band of temperatures around zero degrees Kelvin.

(C)The synthesis of interstellar formaldehyde can be activated by means other than cosmic rays.

(D)Simple molecules can be synthesized by means of tunneling.

(E)Classical chemical reactions do not occur at temperatures close to absolute zero.

6.Which of the following best describes the hypothesis of Hoyle and Wickramasinghe as it is presented in the passage?

(A) Cosmic rays can directly synthesize complex organic molecules.

(B) The galactic clouds are the places where prebiological evolution of compounds necessary to life occurred.

(C) Interstellar formaldehyde can be synthesized by tunneling.

(D) Molecules of interstellar formaldehyde can evolve into complex organic molecules.

(E) Complex organic molecules can be synthesized from stable polysaccharides such as cellulose and starch.

7.Which of the following best describes the organization of the first two paragraphs of the passage?

(A) The author cites a basic principle of classical chemistry and then describes the research from which that principle was developed.

(B) The author cites an apparent contradiction to the principles of classical chemistry and then explains the process of a chemical reaction to show there is in fact no contradiction.

(C) the author describes the role of heat in chemical reactions and then offers a detailed explanation of its function.

(D) The author presents a law of classical chemistry in order to introduce a kind of chemical reaction that differs from it and then explains the essential difference between the two.

(E) The author presents the fundamental rules of classical chemistry in order to introduce an explanation of a specific chemical reaction.

The painter Peter Brandon never dated his works, and their chronology is only now beginning to take shape in the critical literature. A recent dating of a Brandon self-portrait to 1930 is surely wrong. Brandon was 63 years old in 1930, yet the painting shows a young, dark-haired man-obviously Brandon, but clearly not a man of 63.

8. Which of the following, if justifiably assumed, allows the conclusion to be properly drawn?

(A) There is no securely dated self-portrait of Brandon that he painted when he was significantly younger than 63.

(B) In refraining from dating his works, Brandon intended to steer critical discussion of them away from considerations of chronology.

(C) Until recently, there was very little critical literature on the works of Brandon.

(D) Brandon at age 63 would not have portrayed himself in a painting as he had looked when he was a young man.

(E) Brandon painted several self-portraits that showed him as a man past the age of 60.

This is not to deny that the Black gospel music of the early twentieth century differed in important ways from the slave spirituals. Whereas spirituals were created and disseminated in folk fashion, gospel music was composed, published, copyrighted, and sold by professionals. Nevertheless, improvisation remained central to gospel music. One has only to listen to the recorded repertoire of gospel songs to realize that Black gospel singers rarely sang a song precisely the same way twice and never according to its exact musical notation. They performed what jazz musicians call "head arrangements" proceeding from their own feelings and from the way "the spirit" moved them at the time. This improvisatory element was reflected in the manner in which gospel music was published. (122 words)

9.The author mentions "folk fashion" most likely in order to

(A) counter an assertion about the role of improvisation in music created by Black people

(B) compare early gospel music with gospel music written later in the twentieth century

(C) make a distinction between gospel music and slave spirituals

(D) introduce a discussion about the dissemination of slave spirituals

(E) describe a similarity between gospel music and slave spirituals

10.Of the following sentences, which is most likely to have immediately preceded the passage?

(A) Few composers of gospel music drew on traditions such as the spiritual in creating their songs.

(B) Spirituals and Black gospel music were derived from the same musical tradition.

(C) The creation and singing of spirituals, practiced by Black Americans before the Civil War, continued after the war.

(D) Spirituals and gospel music can be clearly distinguished from one another.

(E) Improvisation was one of the primary characteristics of the gospel music created by Black musicians.

Exercise 33

Writing of the Iroquois nation, Smith has argued that through the chiefs' council, tribal chiefs traditionally maintained complete control over the political affairs of both the Iroquois tribal league and the individual tribes belonging to the league, whereas the sole jurisdiction over religious affairs resided with the shamans. He contended that this division was maintained until the late nineteenth century. However, Smith fails to recognize that this division of power between the tribal chiefs and shamans was not actually rooted in Iroquois tradition; rather, it resulted from the Iroquois' resettlement on reservations early in the nineteenth century. Prior to resettlement, the chiefs' council controlled only the broad policy of the tribal league; individual tribes had institutions— most important, the longhouse— to govern their own affairs. In the longhouse, the tribe's chief influenced both political and religious affairs.

(137 words)

1. It can be inferred that the author of the passage regards Smith's argument as
   (A) provocative and potentially useful, but flawed by poor organization
   (B) eloquently presented, but needlessly inflammatory
   (C) accurate in some of its particulars, but inaccurate with regard to an important point.
   (D) historically sound, but overly detailed and redundant
   (E) persuasive in its time, but now largely outdated

2. The author of the passage implies that which of the following occurred after the Iroquois were resettled on reservations early in the nineteenth century?
   (A) Chiefs became more involved in their tribes' religious affairs.
   (B) The authority of the chiefs' council over the affairs of individual tribes increased.
   (C) The political influence of the Iroquois shamans was diminished.
   (D) individual tribes coalesced into the Iroquois tribal league.
   (E) The longhouse because a political rather than a religious institution.

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Over the years, biologists have suggested two main pathways by which sexual selection may have shaped the evolution of male birdsong. In the first, male competition and intrasexual selection produce relatively short, simple songs used mainly in territorial behavior. In the second, female choice and intersexual selection produce longer, more complicated songs used mainly in mate attraction; like such visual ornamentation as the peacock's tail, elaborate vocal characteristics increase the male's chances of being chosen as a mate, and he thus enjoys more reproductive success than his less ostentatious rivals. The two pathways are not mutually exclusive, and we can expect to find examples that reflect their interaction. Teasing them apart has been an important challenge to evolutionary biologists.

Early research confirmed the role of intrasexual selection. In a variety of experiments in the field, males responded aggressively to recorded songs by exhibiting territorial behavior near the speakers. The breakthrough for research into intersexual selection came in the development of a new technique for investigating female response in the laboratory. When female cowbirds raised in isolation in soundproof chambers were exposed to recordings of male song, they responded by exhibiting mating behavior. By quantifying the responses, researchers were able to determine what particular features of the song were most important. In further experiments on song sparrows, researchers found that when exposed to a single song type repeated several times or to a repertoire of different song types, females responded more to the latter. The beauty of the experimental design is that it effectively rules out confounding variables; acoustic isolation assures that the female can respond only to the song structure itself.

If intersexual selection operates as theorized, males with more complicated songs should not only attract females more readily but should also enjoy greater reproductive success. At first, however, researchers doing fieldwork with song sparrows found no correlation between larger repertoires and early mating, which has been shown to be one indicator of reproductive success; further, common measures of male quality used to predict reproductive success, such as weight, size, age, and territory, also failed to correlate with song complexity.

The confirmation researchers had been seeking was finally achieved in studies involving two varieties of warblers. Unlike the song sparrow, which repeats one of its several song types in bouts before switching to another, the warbler continuously composes much longer and more variable songs without repetition. For the first time, researchers found a significant correlation between repertoire size and early mating, and they discovered further that repertoire size had a more significant effect than any other measure of male quality on the number of young produced. The evidence suggests that warblers use their extremely elaborate songs primarily to attract females, clearly confirming the effect of intersexual selection on the evolution of birdsong.

(462 words)

3. The passage is primarily concerned with
   (A) showing that intrasexual selection has a greater effect on birdsong than does intersexual selection
   (B) contrasting the role of song complexity in several species of birds
   (C) describing research confirming the suspected relationship between intersexual selection and the complexity of birdsong
   (D) demonstrating the superiority of laboratory work over field studies in evolutionary biology
   (E) illustrating the effectiveness of a particular approach to experimental design in evolutionary biology

4.The author mentions the peacock's tail in the first paragraph most probably in order to
(A) cite an exception to the theory of the relationship between intrasexual selection and male competition
(B) illustrate the importance of both of the pathways that shaped the evolution of birdsong
(C) draw a distinction between competing theories of intersexual selection
(D) give an example of a feature that may have evolved through intersexual selection by female choice
(E) refute a commonly held assumption about the role of song in mate attraction

5. The passage indicates that researchers raised female cowbirds in acoustic isolation in order to
   (A) eliminate confounding variables
   (B) approximate field conditions
   (C) measure reproductive success
   (D) quantify repertoire complexity
   (E) prevent early mating

6. According to the passage, the song sparrow is <u>unlike</u> the warbler in that the song sparrow
   (A) uses songs mainly in territorial behavior
   (B) continuously composes long and complex songs
   (C) has a much larger song repertoire
   (D) repeats one song type before switching to another
   (E) responds aggressively to recorded songs

Mayor: Four years ago when we reorganized the city police department in order to save money, critics claimed that the reorganization would make the police less responsive to citizens and would thus lead to more crime. The police have compiled theft statistics from the years following the reorganization that show that the critics were wrong. There was an overall decrease in reports of thefts of all kinds, including small thefts.

7. Which of the following, if true, most seriously challenges the mayor's argument?

(A) When city police are perceived as unresponsive, victims of theft are less likely to report thefts to the police.

(B) The mayor's critics generally agree that police statistics concerning crime reports provide the most reliable available data on crime rates.

(C) In other cities where police departments have been similarly reorganized, the numbers of reported thefts have generally risen following reorganization.

(D) The mayor's reorganization of the police department failed to save as much money as it was intended to save.

(E) During the four years immediately preceding the reorganization, reports of all types of theft had been rising steadily in comparison to reports of other crimes.

The term "remote sensing" refers to the techniques of measurement and interpretation of phenomena from a distance. Prior to the mid-1960's the interpretation of film images was the primary means for remote sensing of the Earth's geologic features. With the development of the optomechanical scanner, scientists began to construct digital multispectral images using data beyond the sensitivity range of visible light photography. These images are constructed by mechanically aligning pictorial representations of such phenomena as the reflection of light waves outside the visible spectrum, the refraction of radio waves, and the daily changes in temperature in areas on the Earth's surface. The advantage of digital over photographic imaging is evident: the resulting numerical data are precisely known, and digital data are not subject to the vagaries of difficult-to- control chemical processing.

8. It can be inferred from the passage that a major disadvantage of photographic imaging in geologic mapping is that such photography

(A) cannot be used at night
(B) cannot focus on the details of a geologic area
(C) must be chemically processed
(D) is always enhanced by digital reconstruction
(E) cannot reflect changes over extended periods of time

For many years, Benjamin Quarles' seminal account of the participation of African Americans in the American Revolution has remained the standard work in the field. According to Quarles, the outcome of this conflict was mixed for African American slaves who enlisted in Britain's fight against its rebellious American colonies in return for the promise of freedom: the British treacherously resold many into slavery in the West Indies, while others obtained freedom in Canada and Africa. Building on Quarles' analysis of the latter group, Sylvia Frey studied the former slaves who emigrated to British colonies in Canada. According to Frey, these refugees -- the most successful of the African American Revolutionary War participants -- viewed themselves as the ideological heirs of the American Revolution. Frey sees this inheritances reflected in their demands for the same rights that the American revolutionaries had demanded from the British: land ownership, limits to arbitrary authority and burdensome taxes, and freedom of religion. (157 words)

9.Which of the following can be inferred from the passage concerning Britain's rule in its Canadian colonies after the American Revolution?

(A) Humiliated by their defeat by the Americans, the British sharply curtailed civil rights in their Canadian colonies.

(B) The British largely ignored their Canadian colonies.

(C) The British encouraged the colonization of Canada by those African Americans who had served on the American side as well as by those who had served on the British side.

(D) Some of Britain's policies in its Canadian colonies were similar to its policies in its American colonies before the American Revolution.

(E) To reduce the debt incurred during the war, the British imposed even higher taxes on the Canadian colonists than they had on the American colonists.

10.Which of the following is most analogous to the relationship between the African American Revolutionary War participants who settled in Canada after the American Revolution and the American revolutionaries, as that relationship is described in the passage?

(A) A brilliant pupil of a great musician rebels against the teacher, but adopts the teacher's musical style after the teacher's unexpected death.

(B) Two warring rulers finally make peace after a lifetime of strife when they realize that they have been duped by a common enemy.

(C) A child who has sided with a domineering parent against a defiant sibling later makes demands of the parent similar to those once made by the sibling.

(D) A writer spends much of her life popularizing the work of her mentor, only to discover late in life that much of the older writer's work is plagiarized from the writings of a foreign contemporary.

(E) Two research scientists spend much of their careers working together toward a common goal, but later quarrel over which of them should receive credit for the training of a promising student.

Exercise 34

Only an effective collaboration between filmmakers and art historians can create films that will enhance viewers' perceptions of art. Filmmakers need to resist the impulse to move the camera quickly from detail to detail for fear of boring the viewer, to frame the image for the sake of drama alone, to add music for fear of silence. Filmmakers are aware that an art object demands concentration and, at the same time, are concerned that it may not be compelling enough—and so they hope to provide relief by interposing "real" scenes that bear only a tangential relationship to the subject. But a work of art needs to be explored on its own terms. On the other hand, art historians need to trust that one can indicate and analyze, not solely with words, but also by directing the viewer's gaze. The specialized written language of art history needs to be relinquished or at least tempered for the screen. (158 words)

1.The passage suggests that a filmmaker desiring to enhance viewers' perceptions of art should do which of the following?

(A) Rely on the precise language of art history when developing scripts for films on art.

(B) Rely on dramatic narrative and music to set a film's tone and style.

(C) Recognize that a work of art by itself can be compelling enough to hold a viewer's attention

(D) Depend more strongly on narration instead of camera movements to guide the viewer's gaze.

(E) Emphasize the social and the historical contexts within which works of art have been created.

2.According to the passage, art historians desiring to work with filmmakers to enhance the public's appreciation of art need to acknowledge which of the following?

(A) The art historian's role in the creation of a film on art is likely to be a relatively minor one.

(B) Film provides an ideal opportunity to acquaint viewers with a wide range of issues that relate incidentally to a work of art.

(C) An in-depth analysis of a work of art is not an appropriate topic for a film on art.

(D) Although silence may be an appropriate background when viewing a work of art in a museum, it is inappropriate in a film.

(E) Film can use nonverbal means to achieve some of the same results that a spoken or written discourse can achieve.

As people age, their cells become less efficient and less able to replace damaged components. At the same time their tissues stiffen. For example, the lungs and the heart muscle expand less successfully, the blood vessels become increasingly rigid, and the ligaments and tendons tighten.

Few investigators would attribute such diverse effects to a single cause. Nevertheless, researchers have discovered that a process long known to discolor and toughen foods may also contribute to age- related impairment of both cells and tissues. That process is nonenzymatic glycosylation, whereby glucose becomes attached to proteins without the aid of enzymes. When enzymes attach glucose to proteins (enzymatic glycosylation), they do so at a specific site on a specific protein molecule for a specific purpose. In contrast, the nonenzymatic process adds glucose haphazardly to any of several sites along any available peptide chain within a protein molecule.

This nonenzymatic glycosylation of certain proteins has been understood by food chemists for decades, although few biologists recognized until recently that the same steps could take place in the body. Nonenzymatic glycosylation begins when an aldehyde group (CHO) of glucose and an amino group (NH_2) of a protein are attracted to each other. The molecules combine, forming what is called a Schiff base within the protein. This combination is unstable and quickly rearranges itself into a stabler, but still reversible, substance known as an Amadori product.

If a given protein persists in the body for months or years, some of its Amadori products slowly dehydrate and rearrange themselves yet again, into new glucose-derived structures. These can combine with various kinds of molecules to form irreversible structures named advanced glycosylation end products (AGE's). Most AGE's are yellowish brown and fluorescent and have specific spectrographic properties. More important for the body, many are also able to cross-link adjacent proteins, particularly ones that give structure to tissues and organs. Although no one has yet satisfactorily described the origin of all such bridges between proteins, many investigators agree that extensive cross-linking of proteins probably contributes to the stiffening and loss of elasticity characteristic of aging tissues.

In an attempt to link this process with the development of cataracts (the browning and clouding of the lens of the eye as people age), researchers studied the effect of glucose on solutions of purified crystallin, the major protein in the lens of the eye. Glucose-free solutions remained clear, but solutions with glucose caused the proteins to form clusters, suggesting that the molecules had become cross-linked. The clusters diffracted light, making the solution opaque. The researchers also discovered that the pigmented cross-links in human cataracts have the brownish color and fluorescence characteristic of AGE's. These data suggest that nonenzymatic glycosylation of lens crystallins may contribute to cataract formation. (454 words)

For the following question, consider each of the choices separately and select all that apply

3. According to the passage, which of the following is NOT characteristic of enzymatic glycosylation of proteins?

A Proteins affected by the process are made unstable.

B Glucose attachment impairs and stiffens tissues.

C Glucose is attached to proteins for specific purposes.

4. According to the passage, which of the following statements is true of Amadori products in proteins?

(A) They are more plentiful in a dehydrated environment.

(B) They are created through enzymatic glycosylation.

(C) They are composed entirely of glucose molecules.

(D) They are derived from Schiff bases.

(E) They are derived from AGE's

5. Which of the following best describes the function of the third paragraph of the passage?

(A) It offers evidence that contradicts the findings described in the first two paragraphs.

(B) It presents a specific example of the process discussed in the first two paragraphs.

(C) It explains a problem that the researchers mentioned in the second paragraph have yet to solve.

(D) It evaluates the research discoveries described in the previous paragraph.

(E) It begins a detailed description of the process introduced in the previous two paragraphs.

6. The passage suggests that which of the following would be LEAST important in determining whether nonenzymatic glycosylation is likely to have taken place in the proteins of a particular tissue?

(A) The likelihood that the tissue has been exposed to free glucose

(B) The color and spectrographic properties of structures within the tissue.

(C) The amount of time that the proteins in the tissue have persisted in the body

(D) The number of amino groups within the proteins in the tissue

(E) The degree of elasticity that the tissue exhibits

It takes a particular talent to be a successful business manager. Business courses can help people to solve management problems, but such courses can do so only for those people with managerial talent. Such people should take business courses to acquire ideas that they can subsequently use to good advantage if management problems happen to arise.

7. If the statements above are true, which of the following must also be true on the basis of them?

(A) People who are helped by business courses in solving management problems also have managerial talent.

(B) People who are already skilled at solving management problems are unlikely to benefit from business courses.

(C) Most ideas that are used successfully in solving management problems are those acquired in business courses.

(D) People who lack managerial talent are more likely to take business courses than are people who have managerial talent.

(E) Those people who have never taken business courses are unable to solve management problems when such problems arise.

The age at which young children begin to make moral discriminations about harmful actions committed against themselves or others has been the focus of recent research into the moral development of children. Until recently, child psychologists supported pioneer developmentalist Jean Piaget in his hypothesis that because of their immaturity, children under age seven do not take into account the intentions of a person committing accidental or deliberate harm, but rather simply assign punishment for transgressions on the basis of the magnitude of the negative consequences caused.

However, in recent research, Keasey found that six- year-old children not only distinguish between accidental and intentional harm, but also judge intentional harm as naughtier, regardless of the amount of damage produced. Both of these findings seem to indicate that children, at an earlier age than Piaget claimed, advance into the second stage of moral development, moral autonomy, in which they accept social rules but view them as more arbitrary than do children in the first stage. (163 words)

8.According to the passage, Piaget and Keasey would not have agreed on which of the following points?

(A) The kinds of excuses children give for harmful acts they commit

(B) The age at which children begin to discriminate between intentional and unintentional harm

(C) The intentions children have in perpetrating harm

(D) The circumstances under which children punish harmful acts

(E) The justifications children recognize for mitigating punishment for harmful acts

9.According to the passage, Keasey's findings support which of the following conclusions about six-year-old children?

(A)They have the ability to make autonomous moral judgments.

(B)They regard moral absolutism as a threat to their moral autonomy.

(C)They do not understand the concept of public duty.

(D)They accept moral judgment made by their peers more easily than do older children.

(E)They make arbitrary moral judgments.

As of the late 1980's. neither theorists nor large-scale computer climate models could accurately predict whether cloud systems would help or hurt a warming globe. Some studies suggested that a four percent increase in stratocumulus clouds over the ocean could compensate for a doubling in atmospheric carbon dioxide, preventing a potentially disastrous planetwide temperature increase. On the other hand, an increase in cirrus clouds could increase global warming.

That clouds represented the weakest element in climate models was illustrated by a study of fourteen such models. Comparing climate forecasts for a world with double the current amount of carbon dioxide, researchers found that the models agreed quite well if clouds were not included. But when clouds were incorporated, a wide range of forecasts was produced.

(125 words)

10. Select the sentence that indicates one reason the fourteen models described in the passage failed to agree.

Exercise 35

It is their sensitive response to human circumstance that accounts for the persistence of certain universal ideas. Rabbi Meir, a second-century scholar, admonished his disciples to look not at the pitcher but at its contents because, he stated, "Many a new pitcher has been found to be full of old wine." Creative ideas not only produce their own instruments of survival as time and circumstances demand, but permit the substitution of new forms for old under the pressure of changed circumstances. For example, democracy, as an idea, originated in ancient Greece and was carried from there to Western Europe and the Americas. But it did not retain the ancient Greek form: it passed through several reforming processes and exists today in many countries. Democratic governments differ in form because democracy is in principle dynamic and has therefore responded to local needs.

(141 words)

1. According to the passage, democracy is an example of

(A) a human circumstance that has molded creative ideas

(B) an instrument of survival that has altered its original form

(C) an attribute of a creative idea that has allowed that idea to persist

(D) a creative idea that has persisted because of its adaptability

(E) a reforming process that has culminated in the creation of modern governments

2.The "new pitcher" mentioned in the passage is the equivalent of which of the following elements in the author's discussion of democracy?

(A) Ancient Greece

(B) The idea of democracy

(C) A modern democratic government

(D) A dynamic principle

(E) The Greek form of democracy

Aided by the recent ability to analyze samples of air trapped in glaciers, scientists now have a clearer idea of the relationship between atmospheric composition and global temperature change over the past 160,000 years. In particular, determination of atmospheric composition during periods of glacial expansion and retreat (cooling and warming) is possible using data from the 2,000-meter Vostok ice core drilled in Antarctica. The technique involved is similar to that used in analyzing cores of marine sediments, where the ratio of the two common isotopes of oxygen, ^{18}O and ^{16}O, accurately reflects past temperature changes. Isotopic analysis of oxygen in the Vostok core suggests mean global temperature fluctuations of up to 10 degrees centigrade over the past 160,000 years.

Data from the Vostok core also indicate that the amount of carbon dioxide has fluctuated with temperature over the same period: the higher the temperature, the higher the concentration of carbon dioxide and the lower the temperature, the lower the concentration. Although change in carbon dioxide content closely follows change in temperature during periods of deglaciation, it apparently lags behind temperature during periods of cooling. The correlation of carbon dioxide with temperature, of course, does not establish whether changes in atmospheric composition caused the warming and cooling trends or were caused by them.

The correlation between carbon dioxide and temperature throughout the Vostok record is consistent and predictable. The absolute temperature changes, however, are from 5 to 14 times greater than would be expected on the basis of carbon dioxide's own ability to absorb infrared radiation, or radiant heat. This reaction suggests that, quite aside from changes in heat-trapping gases, commonly known as greenhouse gases, certain positive feedbacks are also amplifying the temperature change. Such feedbacks might involve ice on land and sea, clouds, or water vapor, which also absorb radiant heat.

Other data from the Vostok core show that methane gas also correlates closely with temperature and carbon dioxide. The methane concentration nearly doubled, for example, between the peak of the penultimate glacial period and the following interglacial period. Within the present interglacial period it has more than doubled in just the past 300 years and is rising rapidly. Although the concentration of atmospheric methane is more than two orders of magnitude lower than that of carbon dioxide, it cannot be ignored: the radiative properties of methane make it 20 times more effective, molecule for molecule, than carbon dioxide in absorbing radiant heat. On the basis of a simulation model that climatological researchers have developed, methane appears to have been about 25 percent as important as carbon dioxide in the warming that took place during the most recent glacial retreat 8,000 to 10,000 years ago.

(445 words)

For the following question, consider each of the choices separately and select all that apply

3. The passage provides information to support which of the following statements about methane EXCEPT?

A Methane is more effective than carbon dioxide in absorbing radiant heat.

B The higher the concentration of carbon dioxide in the Earth's atmosphere; the lower the concentration of methane.

C Most of the global warming that has occurred during the past 10 years has been associated with increased methane concentration.

4. According to the passage, which of the following statements best describes the relationship between carbon dioxide and global temperature?

(A) Carbon dioxide levels change immediately in response to changes in temperature.

(B) Carbon dioxide levels correlate with global temperature during cooling periods only.

(C) Once carbon dioxide levels increase, they remain high regardless of changes in global temperature.

(D)Carbon dioxide levels increase more quickly than global temperature does.

(E) During cooling periods, carbon dioxide levels initially remain high and then decline.

5. It can be inferred from the passage that a long-term decrease in the concentration of carbon dioxide in the Earth's atmosphere would

(A) increase methane concentration in the Earth's atmosphere

(B) accompany a period of glaciations

(C) encourage the formation of more oxygen isotopes in the Earth's atmosphere

(D) promote the formation of more water in the Earth's global environment

(E) increase the amount of infrared radiation absorbed by the Earth's atmosphere

6. The passage suggests that when the methane concentration in the Earth's atmosphere decreases, which of the following also happens?

(A) Glaciers melt faster.

(B) The concentration of carbon dioxide increases.

(C) The mean global temperature decreases.

(D) Carbon dioxide absorbs more radiant beat

(E) More clouds form in the Earth's atmosphere

Most of Earth's surface is ocean. The ocean floor is inaccessible for extensive research without equipment of greater technological sophistication than is currently available. It must therefore be true that scientists know less about the ocean floor environment than about almost any other environment on Earth.

7. Which of the following, if true, provides the most support for the conclusion?

(A) Many mountain ranges lie entirely beneath the ocean surface, yet new underwater surveying equipment has produced three-dimensional charts of them that are as accurate as those available for mountain ranges on land.

(B) Strong water currents circulate on the ocean floor, but the general pattern of their movement is not so well understood as is the pattern of air currents that circulate over land.

(C) In contrast to most land environments, temperature conditions at the ocean floor are generally stable and uniform, since sunlight does not penetrate far below the ocean surface.

(D) Very few people have seen detailed maps of extended regions of the ocean floor, even though such maps are available in almost all large libraries.

(E) Animals living on the ocean floor must be able to withstand water pressure that is far greater than the atmospheric pressure with which land animals live.

Historians have recently begun to note the increase in demand for luxury goods and services that took place in eighteenth-century England. To answer the question of why consumers became so eager to buy, some historians have pointed to the ability of manufacturers to advertise in a relatively uncensored press. This, however, hardly seems a sufficient answer. McKendrick favors a Veblen model of conspicuous consumption stimulated by competition for status. The "middling sort" bought goods and services because they wanted to follow fashions set by the rich. Again, we may wonder whether this explanation is sufficient. Do not people enjoy buying things as a form of self-gratification? If so, consumerism could be seen as a product of the rise of new concepts of individualism and materialism, but not necessarily of the frenzy for conspicuous competition. (135 words)

8.In the paragraph, the author is primarily concerned with

(A) contrasting two theses and offering a compromise

(B) questioning two explanations and proposing a possible alternative to them

(C) paraphrasing the work of two historians and questioning their assumptions

(D) examining two theories and endorsing one over the other

(E) raising several questions but implying that they cannot be answered.

9.According to the passage, a Veblen model of conspicuous consumption has been used to

(A) investigate the extent of the demand for luxury goods among social classes in eighteenth-century England

(B) classify the kinds of luxury goods desired by eighteenth-century consumers

(C) explain the motivation of eighteenth-century consumers to buy luxury goods

(D) establish the extent to which the tastes of rich consumers were shaped by the middle classes in eighteenth-century England

(E)compare luxury consumerism in eighteenth-century England with such consumerism in the twentieth century

How can the hormone adrenaline that does not act directly on the brain have a regulatory effect on brain function? Recently, we tested the possibility that one of the hormone's actions outside the brain might be responsible. Since one consequence of adrenaline release in an animal is an increase in blood glucose levels, we examined the effects of glucose on memory in rats. We found that glucose injected immediately after training enhances memory tested the next day. Additional evidence was provided by negative findings: drugs called adrenergic antagonists, which block peripheral adrenaline receptors, disrupted adrenaline's ability to regulate memory but did not affect memory enhancements produced by glucose that was not stimulated by adrenaline. These results are as they should be if adrenaline affects memory modulation by increasing blood glucose levels. (131 words)

10.The author refers to the results of the experiment using adrenergic antagonists as "negative findings" most likely because the adrenergic antagonists

(A) failed to disrupt adrenaline's effect on memory
(B) did not affect glucose's ability to enhance memory.
(C) did not block adrenaline's ability to increase blood glucose levels
(D) only partially affected adrenaline's ability to enhance memory
(E) disrupted both adrenaline's and glucose's effect on memory

Exercise 36

An experiment conducted aboard Space Lab in 1983 was the first attempt to grow protein crystals in the low-gravity environment of space. That experiment is still cited as evidence that growing crystals in microgravity can increase crystal size: the authors reported that they grew lysozyme protein crystals 1,000 times larger than crystals grown in the same device on Earth. Unfortunately, the authors did not point out that their crystals were no larger than the average crystal grown using other, more standard techniques in an Earth laboratory. No research has yet produced results that could justify the enormous costs of producing crystals on a large scale in space. To get an unbiased view of the usefulness of microgravity crystal growth, crystals grown in space must be compared with the best crystals that have been grown with standard techniques on Earth.

(139 words)

1.It can be inferred from the passage that the author would find the Space Lab experiment more impressive if which of the following were true?

(A) The results of the Space Lab experiment could be replicated in producing other kinds of crystals in addition to lysozyme protein.

(B) The device used in the experiment produced larger crystals on Earth than it did in space.

(C) The size of the crystals produced in the experiment exceeded the size of crystals grown in Earth laboratories using standard techniques.

(D)The cost of producing the crystals in space exceeded that of producing them using standard laboratory techniques.

(E) The standard techniques used in Earth laboratories were modified in the Space Lab experiment due to the effects of microgravity.

2.Which of the following can be inferred from the passage about the device used to grow crystals in the Space Lab experiment?

(A) The device is more expensive to manufacture than are the devices used in standard techniques in an Earth laboratory.

(B) The device has not been used to grow crystals in space since the Space Lab experiment of 1983.

(C) Crystals grown in the device on Earth tend to be much smaller than crystals grown in it in space.

(D) Crystals grown in the device in space have been exceeded in size by crystals grown in subsequent experiments in space using other devices.

(E) The experiments in which the device was used were conducted with proper controls.

An experimental version of the traditional scholarly methods course was designed to raise students' consciousness about the usefulness of traditional learning for any modern critic or theorist. To minimize the artificial aspects of the conventional course, the usual procedure of assigning a large number of small problems drawn from the entire range of historical periods was abandoned, though this procedure has the obvious advantage of at least superficially familiarizing students with a wide range of reference sources. Instead, students were engaged in a collective effort to do original work on a neglected eighteenth-century writer, Elizabeth Griffith, to give them an authentic experience of literary scholarship and to inspire them to take responsibility for the quality of their own work. Griffith's work presented a number of advantages for this particular pedagogical purpose. The body of extant scholarship on Griffith was so tiny that it could all be read in a day. In addition, because Griffith was successful in the eighteenth century, her exclusion from the canon and virtual disappearance from literary history also helped raise issues concerning the current canon.

(179 words)

3. The author of the passage suggests that which of the following is a disadvantage of the strategy employed in the experimental scholarly methods course?
   (A) Students were not given an opportunity to study women writers outside the canon.
   (B) Students' original work would not be appreciated by recognized scholars.
   (C) Little scholarly work has been done on the work of Elizabeth Griffith.
   (D) Most of the students in the course had had little opportunity to study eighteenth-century literature.
   (E) Students were not given an opportunity to encounter certain sources of information that could prove useful in their future studies.

4. It can be inferred that the author of the passage considers traditional scholarly methods courses to be
   (A) irrelevant to the work of most students
   (B) inconsequential because of their narrow focus
   (C) unconcerned about the accuracy of reference sources
   (D) too superficial to establish important facts about authors
   (E) too wide-ranging to approximate genuine scholarly activity

5. Which of the following most logically completes the argument?

Each year a consumer agency ranks all domestic airlines for on-time performance during the previous year, using as its sole criterion the percentage of each airline's flights that left no more than fifteen minutes late. The agency does not count delays due to mechanical reasons, but the fact that the percentage of delayed flights hat were delayed for mechanical reasons was approximately the same for all domestic airlines last year means that ____.

(A) including delays for mechanical reasons in calculating the airline rankings for on-time performance would have had little, if any, effect on last year's rankings
(B) airlines would work harder to reduce delays if delays for mechanical reasons were included in the determination of on-time performance rankings
(C) the agency's rankings do not give consumers an accurate idea of how a given airline compares to other airlines with respect to the percentage of flights delayed last year
(D) those airlines with the best on-time performance record last year also had the greatest number of delays for mechanical reasons
(E) on-time performance was approximately the same for all domestic airlines last year

Experiments show that insects can function as pollinators of cycads, rare, palmlike tropical plants. Furthermore, cycads removed from their native habitats—and therefore from insects native to those habitats—are usually infertile. Nevertheless, anecdotal reports of wind pollination in cycads cannot be ignored. The structure of cycads male cones is quite consistent with the wind dispersal of pollen, clouds of which are released from some of the larger cones. The male cone of *Cycas circinalis*, for example, sheds almost 100 cubic centimeters of pollen, most of which is probably dispersed by wind. Furthermore, the structure of most female cycad cones seems inconsistent with direct pollination by wind. Only in the *Cycas* genus are the females' ovules accessible to airborne pollen, since only in this genus are the ovules surrounded by a loose aggregation of megasporophylls rather than by a tight cone.

(141 words)

For the following question, consider each of the choices separately and select all that apply

6. The passage suggests that which of the following is true of the structure of cycad cones?

A The structure of cycad cones provides conclusive evidence in favor of one particular explanation of cycad pollination.

B The structure of male cycad cones rules out a possible mechanism for cycad pollination that is suggested by the structure of most female cycad cones.

C The structure of male cycad cones is consistent with a certain means of cycad pollination, but that means is inconsistent with the structure of most female cycad cones.

7. The evidence in favor of insect pollination of cycads presented in the second sentence would be more convincing if which of the following were also true?

(A) Only a small variety of cycad species can be successfully transplanted.

(B) Cycads can sometimes be pollinated by means other than wind or insects.

(C) Insects indigenous to regions to which cycads are transplanted sometimes feed on cycads.

(D) Winds in the areas to which cycads are usually transplanted are similar to winds in cycads' native habitats.

(E) The transplantation of cycads from one region to another usually involves the accidental removal and introduction of insects as well.

That sales can be increased by the presence of sunlight within a store has been shown by the experience of the only Savefast department store with a large skylight. The skylight allows sunlight into half of the store, reducing the need for artificial light. The rest of the store uses only artificial light. Since the store opened two years ago, the departments on the sunlit side have had substantially higher sales than the other departments.

8. Which of the following, if true, most strengthens the argument?

(A) On particularly cloudy days, more artificial light is used to illuminate the part of the store under the skylight.

(B) When the store is open at night, the departments in the part of the store under the skylight have sales that are no higher than those of other departments.

(C) Many customers purchase items from departments in both parts of the store on a single shopping trip.

(D) Besides the skylight, there are several significant architectural differences between the two parts of the store.

(E) The departments in the part of the store under the skylight are the departments that generally have the highest sales in other stores in the Savefast chain.

Influenced by the view of some twentieth-century feminists that women's position within the family is one of the central factors determining women's social position, some historians have underestimated the significance of the woman suffrage movement. These historians contend that nineteenth-century suffragism was less radical and, hence, less important than, for example, the moral reform movement or domestic feminism—two nineteenth-century movements in which women struggled for more power and autonomy within the family. True, by emphasizing these struggles, such historians have broadened the conventional view of nineteenth-century feminism, but they do a historical disservice to suffragism. Nineteenth-century feminists and anti-feminist alike perceived the suffragists' demand for enfranchisement as the most radical element in women's protest, in part because suffragists were demanding power that was not based on the institution of the family, women's traditional sphere. When evaluating nineteenth-century feminism as a social force, contemporary historians should consider the perceptions of actual participants in the historical events. (156 words)

9. Select the sentence that includes a qualification of the author's critical attitude toward the study of the historians as they are described in the passage.

For the following question, consider each of the choices separately and select all that apply

10. The passage provides information to support which of the following statements about the historians discussed in the passage EXCEPT

A They rely too greatly on the perceptions of the actual participants in the events they study.
B Their assessment of the significance of nineteenth-century suffragism differs considerably from that of nineteenth-century feminists.
C They devote too much attention to nineteenth-century suffragism at the expense of more radical movements that emerged shortly after the turn of the century.

答　案

第一部分

Exe 1

1. C　2. B　3. D
4. D　5. E
6. D
7. AB　8. A　9. E　10. B
11. Without invoking gods 12. D　13. C

Exe 2

1. A　2. D　3. D
4. AB　5. E
6. B
7. C　8. A　9. AB　10. E
11. ABC　12. E　13. “The fact that distantly r”

Exe 3

1. BC　2. C
3. D　4. C　5. A
6. B　7. A　8. A
9. E　10. “The Amazons were often ” 11. D
12. D　13. BC

Exe 4

1. C　2. AC
3. D　4. A　5. E　6. E
7. A　8. A
9. A　10. B　11. D
12. A

Exe 5

1. D　2. AB　3. C　4. E
5. E
6. B　7. “Long before the Romantics”　8. C
9. D　10. AC
11. A　12. E

Exe 6

1. E　2. E
3. B　4. BC
5. AC　6. E　7. B
8. B
9. A　10. D　11. B　12. D
13. “I have been increasingly impressed”

Exe 7

1. C　2. A
3. B　4. E　5. A
6. C　7. A　8. “Their present high standing is due to”
9. C　10. BC　11. E　12. A
13. C

Exe 8

1. C
2. A　3. E
4. C　5. ABC　6. C
7. AC　8. “I do not mean that”
9. D
10. C　11. E　12. D

Exe 9

1. D　2. A　3. B
4. D　5. B　6. C　7. C
8. B　9. AC
10. C
11. A　12. C　13. “Undoubtedly such elements”

Exe 10

1. A　2. C
3. BC　4. C　5. D　6. E
7. D　8. E　9. C
10. D
11. AC　12. C　13. B

Exe 11

1. D 2. B 3. B 4.B
5. AB 6. B 7."For example, some of " 8. E
9. D
10. E 11. AB 12. A
13. D

Exe 12

1. C 2. A 3. E
4. A 5. ABC 6. "However, the variations" 7. D
8. D 9. A
10. B
11. D 12. C 13. B

Exe 13

1. C 2. B 3. But the recent discovery...
4. A
5. D. 6. D 7. E. 8. B
9. A
10. A 11. A 12. E

Exe 14

1. C. 2. C 3 D
4. B
5. A C 6. D.
7. C 8. B. 9. A
10. D 11. It is now established...
12. A

Exe 15

1. Other workers quickly devoured... 2. A 3. B
4. D
5. A BC 6. C
7.B 8. D 9. C
10. AC 11. D 12. A 13. B

Exe 16

1. AB 2. A 3. A
4. A 5. E
6. B 7. A 8. C 9. E
10. E 11. B
12. D 13. C

第二部分

Exe 17

1. A 2. A 3. B
4. D
5. B 6. A 7. E 8. D
9. B
10. C

Exe 18

1. BC 2. D 3. B
4. C
5. C 6. D 7. B 8. B
9. E
10. C

Exe 19

1. E 2. D 3. A 4. B
5. B
6. A 7. D
8. A
9. ABC
10. E

Exe 20

1. D 2. “These minerals can be dated…”
3. B 4. AB 5. C 6. B
7. A 8. B
9. B
10. AB

Exe 21

1. D
2. D 3. A 4. B 5. A
6. E
7. D
8. B 9. ABC 10. D

Exe 22

1. D 2. B
3. E 4. AC
5. B
6. E 7. “But the play's complex view… ” 8. C
9. D
10. A

Exe 23

1. B 2. A 3. E
4. B
5. B
6. B
7. A 8. B 9. E 10. ABC

Exe 24

1. E
2. “Practically speaking, the artistic maturing...” 3. D
4. ABC 5. C 6. C
7. E
8. B
9. D 10. C

Exe 25

1. A 2. C
3. B
4. A 5. D 6. AC 7. B
8. C 9. A
10. E

Exe 26

1. E
2. C
3. A 4. B 5. E
6. D 7. C 8. E 9. A
10. C

Exe 27

1. D
2. E 3. E 4. BC 5. A
6. D
7. B 8. “The Earth's magnetic field is generated”
9. E 10. B

Exe 28

1. ABC 2. B 3. A
4. B 5. C 6. E 7. C
8. E
9. E
10. B

Exe 29

1. B 2. ABC
3. A
4. “Many of the important effects”
5. A 6. D 7. B 8. A
9. ABC 10. E

Exe 30

1. A 2. D
3.C
4. B 5. D
6. D 7. A
8. E 9. D
10. D

Exe 31

1. A
2. A 3. D 4. "The trees' own defenses raise...." 5. BC
6. A 7. D
8. B
9. E
10. C

Exe 32

1. A
2. B 3. BC
4. B 5. A 6. D 7. D
8. D
9. C 10. B

Exe 33

1. C 2. B
3. C 4. D 5. A 6. D
7. A
8. C
9. D 10. C

Exe 34

1. C 2. E
3. AB 4. D 5. E 6. D
7. A
8. B 9. A
10."But when clouds were incorporated"

Exe 35

1. D 2. C
3. BC 4. E 5. B 6. C
7. B
8. B 9. C
10. B

Exe 36

1. C 2. C
3. E 4. E
5. A
6. C 7. D
8. B
9. “True, by emphasizing these struggles” 10. AC

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[THE END]