SECTION III

Time—35 minutes

27 Questions

Directions: Each passage in this section is followed by a group of questions to be answered on the basis of what is stated or implied in the passage. For some of the questions, more than one of the choices could conceivably answer the question. However, you are to choose the best answer; that is, the response that most accurately and completely answers the question, and blacken the corresponding space on your answer sheet.

The use of computer-generated visual displays in courtrooms is growing as awareness of their ability to recreate crime scenes spreads. Displays currently in use range from still pictures in series that mimic simple movement to sophisticated simulations based on complex applications of rules of physics and mathematics. By making it possible to slow or stop action, to vary visual perspectives according to witnesses' vantage points, or to highlight or enlarge images, computer displays provide litigators with tremendous explanatory advantages. Soon, litigators may even have available graphic systems capable of simulating three dimensions, thus creating the illusion that viewers are at the scene of a crime or accident, directly experiencing its occurrence. The advantages of computer-generated displays derive from the greater psychological impact they have on juries as compared to purely verbal presentations; studies show that people generally retain about 85 percent of visual information but only 10 percent of aural information. This is especially valuable in complex or technical trials, where juror interest and comprehension are generally low. In addition, computers also allow litigators to integrate graphic aids seamlessly into their presentations.

Despite these benefits, however, some critics are urging caution in the use of these displays, pointing to a concomitant potential for abuse or unintentional misuse, such as the unfair manipulation of a juror's impression of an event. These critics argue further that the persuasive and richly communicative nature of the displays can mesmerize jurors and cause them to relax their normal critical faculties. This potential for distortion is compounded when one side in a trial does not use the technology—often because of the considerable expense involved—leaving the jury susceptible to prejudice in favor of the side employing computer displays. And aside from the risk of intentional manipulation of images or deceitful use of capacities such as stop-action and highlighting, there is also the possibility that computer displays can be inherently misleading. As an amalgamation of data collection, judgment, and speculation, the displays may in some instances constitute evidence unsuitable for use in a trial.

To avoid misuse of this technology in the courtroom, practical steps must be taken. First, counsel must be alert to the ever-present danger of its misuse; diligent analyses of the data that form the basis for computer displays should be routinely performed and disclosed. Judges, who have the discretion to disallow displays that might unfairly prejudice one side, must also be vigilant in assessing the displays they do allow. Similarly, judges should forewarn jurors of the potentially biased nature of computer-generated evidence. Finally, steps should be taken to ensure that if one side utilizes computer technology, the opposing side will also have access to it. Granting financial aid in these circumstances would help create a more equitable legal arena in this respect.

1. Which one of the following most accurately states the main point of the passage?

   (A) Those involved in court trials that take advantage of computer-generated displays as evidence need to take steps to prevent the misuse of this evidence.

   (B) The use of computer-generated displays has grown dramatically in recent years because computer aids allow litigators to convey complex information more clearly.

   (C) The persuasive nature of computer-generated displays requires that the rules governing the use of these displays be based on the most sophisticated principles of jurisprudence.

   (D) Litigators' prudent use of computer-generated displays will result in heightened jury comprehension of complex legal issues and thus fairer trials.

   (E) Any disadvantages of computer-generated visual displays can be eliminated by enacting a number of practical procedures to avoid their intentional misuse.

GO ON TO THE NEXT PAGE.

2. Which one of the following most accurately describes the organization of the passage?

   (A) The popularity of a new technology is lamented; criticisms of the technology are voiced; corrective actions to stem its use are recommended.
   (B) A new technology is endorsed; specific examples of its advantages are offered; ways to take further advantage of the technology are presented.
   (C) A new technology is presented as problematic; specific problems associated with its use are discussed; alternative uses of the technology are proposed.
   (D) A new technology is introduced as useful; potential problems associated with its use are identified; recommendations for preventing these problems are offered.
   (E) A new technology is described in detail; arguments for and against its use are voiced; recommendations for promoting the widespread use of the technology are advanced.

3. As described in the passage, re-creating an accident with a computer-generated display is most similar to which one of the following?

   (A) using several of a crime suspect's statements together to suggest that the suspect had a motive
   (B) using an author's original manuscript to correct printing errors in the current edition of her novel
   (C) using information gathered from satellite images to predict the development of a thunderstorm
   (D) using a video camera to gather opinions of passersby for use in a candidate's political campaign advertisements
   (E) using detailed geological evidence to design a museum exhibit depicting a recent volcanic eruption

4. Based on the passage, with which one of the following statements regarding the use of computer displays in courtroom proceedings would the author be most likely to agree?

   (A) The courts should suspend the use of stop-action and highlighting techniques until an adequate financial aid program has been established.
   (B) Computer-generated evidence should be scrutinized to ensure that it does not rely on excessive speculation in depicting the details of an event.
   (C) Actual static photographs of a crime scene are generally more effective as displays than are computer displays.
   (D) Verbal accounts by eyewitnesses to crimes should play a more vital role in the presentation of evidence than should computer displays.
   (E) Computer displays based on insufficient or inaccurate input of data would not seem realistic and would generally not persuade jurors effectively.

5. The author states which one of the following about computer displays used in trial proceedings?

   (A) Despite appearances, computer displays offer few practical advantages over conventional forms of evidence.
   (B) Most critics of computer-generated evidence argue for banning such evidence in legal proceedings.
   (C) Judges should forewarn jurors of the potentially biased nature of computer-generated displays.
   (D) Computer displays are used primarily in technical trials, in which jury interest is naturally low.
   (E) Litigators who utilize computer-generated displays must ensure that the opposing side has equal access to such technology.

6. The author mentions each of the following as an advantage of using computer displays in courtroom proceedings EXCEPT:

   (A) They enable litigators to slow or stop action.
   (B) They can aid jurors in understanding complex or technical information.
   (C) They make it possible to vary visual perspectives.
   (D) They allow litigators to integrate visual materials smoothly into their presentations.
   (E) They prevent litigators from engaging in certain kinds of unjustified speculation.

GO ON TO THE NEXT PAGE.

Through the last half century, the techniques used by certain historians of African art for judging the precise tribal origins of African sculptures on the basis of style have been greatly refined. However, as one recent critic of the historians' classificatory assumptions has put it, the idea that the distribution of a particular style is necessarily limited to the area populated by one tribe may be "a dreadful oversimplification . . . a decided falsification of the very life of art in Africa."

Objects and styles have often been diffused through trade, most notably by workshops of artists who sell their work over a large geographical area. Styles cannot be narrowly defined as belonging uniquely to a particular area; rather, there are important "centers of style" throughout Africa where families, clans, and workshops produce sculpture and other art that is dispersed over a large, multitribal geographical area. Thus, a family of artists belonging to a single ethnic group may produce sculpture on commission for several neighboring tribes. While this practice contributes to a marked uniformity of styles across a large area, the commissioned works must nevertheless be done to some extent in the style of the tribe commissioning the work. This leads to much confusion on the part of those art historians who attempt to assign particular objects to individual groups on the basis of style.

One such center of style is located in the village of Ouri, in central Burkina Faso, where members of the Konaté family continue a long tradition of sculpture production not only for five major neighboring ethnic groups, but in recent times also for the tourist trade in Ouagadougou. The Konaté sculptors are able to distinguish the characteristics of the five styles in which they carve, and will point to the foliate patterns that radiate from the eyes of a Nuna ask, or the diamond-shaped mouth of many Ko masks, as characteristics of a particular tribal style that must be included to satisfy their clients. Nevertheless, their work is consistent in its proportions, composition, color, and technique. In fact, although the Konaté sculptors can identify the styles they carve, the characteristic patterns are so subtly different that few people outside of the area can distinguish Nuna masks from Ko masks.

Perhaps historians of African art should ask if objects in similar styles were produced in centers of style, where artists belonging to one ethnic group produced art for all of their neighbors. Perhaps it is even more important to cease attempting to break down large regional styles into finer and finer tribal styles and substyles, and to recognize that artists in Africa often do not produce work only in their own narrowly defined ethnic contexts. As the case of the Konaté sculptors makes clear, one cannot readily tell which group produced an object by analyzing fine style characteristics.

7. Which one of the following titles most completely and accurately describes the contents of the passage?

(A) *African Centers of Style: Their Implications for Art Historians' Classifications of African Art*
(B) *African Art Redefined: The Impact of the Commercialization of Sculpture and the Tourist Demand on Style*
(C) *Characteristics of African Sculpture: Proportion, Composition, Color, and Technique*
(D) *Style Versus Technique: The Case Against Historians of African Art*
(E) *Konaté Sculptors: Pioneers of the African Art Trade*

8. Based on the passage, the art historians mentioned in line 2 would be most likely to agree with which one of the following statements?

(A) Understanding the nature of centers of style is a key to better classification of African art.
(B) Similarities among African masks can be due to standard techniques used in carving the eyes and mouths of the masks.
(C) Some subtly distinguished substyles should not be distinguished from large regional styles.
(D) It is a fairly recent practice for African mask sculptors to produce masks for tribes of which they are not members.
(E) The tribal origin of African sculptures is important to their classification.

9. According to the passage, which one of the following is a feature that Konaté sculptors can identify as a requirement of a particular tribal style?

(A) horizontal incisions
(B) eye position
(C) top attachments
(D) bottom decorations
(E) mouth shape

10. The author's primary purpose in the passage is to

(A) classify a set of artistic styles according to a newly proposed set of principles
(B) provide evidence that the elements of a particular group of artistic works have been misclassified
(C) explain the principles used by a group of historians to classify certain kinds of artistic works
(D) reveal the underlying assumptions of a traditional approach to the classification of certain kinds of artistic works
(E) argue that a particular approach to classifying certain kinds of artistic works is mistaken

GO ON TO THE NEXT PAGE.

11. The passage provides the most support for which one of the following inferences?

(A) Some of the sculptures that the Konaté family produces are practically indistinguishable from those produced by certain other sculptors far from Burkina Faso.
(B) The carving styles used by some members of the Konaté family are distinctly different from those used by other members.
(C) Other families of sculptors in Burkina Faso collaborate with the Konaté family in producing masks.
(D) The Konaté family produces masks for some African ethnic groups other than the Nuna and Ko groups.
(E) The village of Ouri where the Konaté family produces sculptures is the oldest center of style in Burkina Faso.

12. Which one of the following does the author attribute to the Konaté sculptors?

(A) use of nontraditional materials in sculptures
(B) production of sculptures in several distinct styles that are nevertheless very similar to one another
(C) stylistic innovations that have influenced the work of other sculptors in a large geographical area
(D) adoption of a carving style that was previously used only by members of a different tribe
(E) introduction of the practice of producing sculptures for neighboring groups

13. Which one of the following most accurately expresses what the author means by "centers of style" (line 16)?

(A) geographical areas in which masks and similar sculptures are for the most part interchangeable among a number of closely connected tribes who use them
(B) locations in which works of art are produced by sculptors using a particular style who then instruct other artists throughout large surrounding geographical areas
(C) locations in which stylistically consistent but subtly varied works of art are produced and distributed to ethnically varied surrounding areas
(D) large geographical areas throughout which the various tribes produce works of art that differ subtly along ethnic lines but are so similar that they are very difficult for outside observers to distinguish from one another
(E) locations in which sculptures and similar works of art are traditionally produced by a diverse community of artists who migrate in from various tribes of surrounding areas

GO ON TO THE NEXT PAGE.

Surviving sources of information about women doctors in ancient Greece and Rome are fragmentary: some passing mentions by classical authors, scattered references in medical works, and about 40 inscriptions on tombs and monuments. Yet even from these fragments we can piece together a picture. The evidence shows that in ancient Greece and Rome there were, in fact, female medical personnel who were the ancient equivalent of what we now call medical doctors. So the history of women in medicine by no means begins in 1849 with Dr. Elizabeth Blackwell, the first woman to earn an M.D. in modern times, or even in 1321 with Francesca de Romana's licensure to practice general medicine, the earliest known officially recorded occurrence of this sort.

The very nature of the scant evidence tells us something. There is no list of women doctors in antiquity, no direct comment on the fact that there were such people. Instead, the scattering of references to them indicates that, although their numbers were probably small, women doctors were an unremarkable part of ancient life. For example, in *The Republic* (421 B.C.), the earliest known source attesting to the existence of women doctors in Greece, Plato argues that, for the good of the state, jobs should be assigned to people on the basis of natural aptitude, regardless of gender. To support his argument he offers the example that some women, as well as some men, are skilled in medicine, while others are not. Here, Plato is not trying to convince people that there ought to be women doctors. Rather, he is arguing for an ideal distribution of roles within the state by pointing to something that everyone could already see—that there were female doctors as well as male.

Moreover, despite evidence that some of these women doctors treated mainly female patients, their practice was clearly not limited to midwifery. Both Greek and Latin have distinct terms for midwife and doctor, and important texts and inscriptions refer to female practitioners as the latter. Other references provide evidence of a broad scope of practice for women doctors. The epitaph for one named Domnina reads: "You delivered your homeland from disease." A tribute to another describes her as "savior of all through her knowledge of medicine."

Also pointing to a wider medical practice are the references in various classical medical works to a great number of women's writings on medical subjects. Here, too, the very nature of the evidence tells us something, for Galen, Pliny the elder, and other ancient writers of encyclopedic medical works quote the opinions and prescriptions of male and female doctors indiscriminately, moving from one to the other and back again. As with the male doctors they cite, these works usually simply give excerpts from the female authority's writing without biographical information or special comment.

14. Which one of the following most accurately states the main point of the passage?

(A) There is a range of textual evidence indicating that the existence and professional activity of women doctors were an accepted part of everyday life in ancient Greece and Rome.

(B) Some scholars in ancient Greece and Rome made little distinction in their writings between learned women and learned men, as can especially be seen in those scholars' references to medical experts and practitioners.

(C) Although surviving ancient Greek and Roman texts about women doctors contain little biographical or technical data, important inferences can be drawn from the very fact that those texts pointedly comment on the existence of such doctors.

(D) Ancient texts indicate that various women doctors in Greece and Rome were not only practitioners but also researchers who contributed substantially to the development of medical science.

(E) Scholars who have argued that women did not practice medicine until relatively recently are mistaken, insofar as they have misinterpreted textual evidence from ancient Greece and Rome.

15. Which one of the following does the author mention in the passage?

(A) diseases that were not curable in ancient times but are readily cured by modern medicine

(B) a specialized field of medicine that was not practiced by women in ancient Greece and Rome

(C) a scholar who has argued that Francesca de Romana was the first female doctor in any Western society

(D) the extent to which medical doctors in ancient Greece and Rome were trained and educated

(E) ancient writers whose works refer explicitly to the writings of women

GO ON TO THE NEXT PAGE.

16. The primary function of the third paragraph of the passage is to

(A) provide additional support for the argument presented in the first paragraph
(B) suggest that the implications of the argument presented in the first paragraph are unnecessarily broad
(C) acknowledge some exceptions to a conclusion defended in the second paragraph
(D) emphasize the historical importance of the arguments presented in the first two paragraphs
(E) describe the sources of evidence that are cited in the first two paragraphs in support of the author's main conclusion

17. Which one of the following could most logically be appended to the end of the final paragraph?

(A) So it is only by combining the previously mentioned fragments of ancient writings that historians have been able to construct a fairly complete account of some of these women's lives.
(B) That there were women doctors apparently seemed unremarkable to these writers who cited their works, just as it did to Plato.
(C) Although the content of each of these excerpts is of limited informative value, the very range of topics that they cover suggests that Plato's claims about women doctors should be reevaluated.
(D) These texts indicate that during a certain period of ancient Greek and Roman history there were female medical scholars, but it is unclear whether at that time there were also female medical practitioners.
(E) Nevertheless, these writers' evenhanded treatment of male and female medical researchers must be interpreted partly in light of the conflicting picture of ancient medical practice that emerges from the fragmentary earlier writings.

18. Which one of the following most accurately describes the author's attitude toward the sources of information mentioned in lines 1–5?

(A) wary that they might be misinterpreted due to their fragmentary nature
(B) optimistic that with a more complete analysis they will yield answers to some crucial lingering questions
(C) hopeful that they will come to be accepted generally by historians as authentic documents
(D) confident that they are accurate enough to allow for reliable factual inferences
(E) convinced of their appropriateness as test cases for the application of a new historical research methodology

19. The tribute quoted in lines 45–46 is offered primarily as evidence that at least some women doctors in ancient times were

(A) acknowledged as authorities by other doctors
(B) highly educated
(C) very effective at treating illness
(D) engaged in general medical practice
(E) praised as highly as male doctors

20. The passage most strongly supports which one of the following inferences about women in ancient Greece and Rome?

(A) Those who became doctors usually practiced medicine for only a short time.
(B) Those who were not doctors were typically expected to practice medicine informally within their own families.
(C) There is no known official record that any of them were licensed to practice general medicine.
(D) There is no reliable evidence that any of them who practiced general medicine also worked as a midwife.
(E) Some of those who practiced medicine were posthumously honored for nonmedical civic accomplishments.

GO ON TO THE NEXT PAGE.

Every culture that has adopted the cultivation of maize—also known as corn—has been radically changed by it. This crop reshaped the cultures of the Native Americans who first cultivated it, leading to such developments as the adoption of agrarian and in some cases urban lifestyles, and much of the explosion of European populations after the fifteenth century was driven by the introduction of maize together with another crop from the Americas, potatoes. The primary reason for this plant's profound influence is its sheer productivity. With maize, ancient agriculturalists could produce far more food per acre than with any other crop, and early Central Americans recognized and valued this characteristic of the plant. But why are maize and a few similar crops so much more bountiful than others? Modern biochemistry has revealed the physical mechanism underlying maize's impressive productivity.

To obtain the hydrogen they use in the production of carbohydrates through photosynthesis, all plants split water into its constituent elements, hydrogen and oxygen. They use the resultant hydrogen to form one of the molecules they need for energy, but the oxygen is released into the atmosphere. During photosynthesis, carbon dioxide that the plant takes in from the atmosphere is used to build sugars within the plant. An enzyme, rubisco, assists in the sugar-forming chemical reaction. Because of its importance in photosynthesis, rubisco is arguably the most significant enzyme in the world. Unfortunately, though, when the concentration of oxygen relative to carbon dioxide in a leaf rises to a certain level, as can happen in the presence of many common atmospheric conditions, oxygen begins to bind competitively to the enzyme, thus interfering with the photosynthetic reaction.

Some plants, however, have evolved a photosynthetic mechanism that prevents oxygen from impairing photosynthesis. These plants separate the places where they split water atoms into hydrogen and oxygen from the places where they build sugars from carbon dioxide. Water molecules are split, as in all plants, in specialized chlorophyll-containing structures in the green leaf cells, but the rubisco is sequestered within airtight tissues in the center of the leaf. The key to the process is that in these plants, oxygen and all other atmospheric gases are excluded from the cells containing rubisco. These cells, called the bundle sheath cells, surround the vascular structures of the leaf—structures that function analogously to human blood vessels. Carbon dioxide, which cannot enter these cells as a gas, first undergoes a series of reactions to form an intermediary, nongas molecule named C-4 for the four carbon atoms it contains. This molecule enters the bundle sheath cells and there undergoes reactions that release the carbon dioxide that will fuel the production of carbohydrates (e.g., sugars). Taking its name from the intermediary molecule, the entire process is called C-4 photosynthesis. Such C-4 plants as sugar cane, rice, and maize are among the world's most productive crops.

21. Which one of the following most accurately states the main point of the passage?

(A) The greater productivity of maize, as compared with many other crops, is due to its C-4 photosynthetic process, in which the reactions that build sugars are protected from the effects of excess oxygen.

(B) Because of their ability to produce greater quantities and higher qualities of nutrients, those plants, including maize, that use a C-4 photosynthetic process have helped to shape the development of many human cultures.

(C) C-4 photosynthesis, which occurs in maize, involves a complex sequence of chemical reactions that makes more efficient use of available atmospheric hydrogen than do photosynthetic reactions in non-C-4 plants.

(D) The presence of the enzyme rubisco is a key factor in the ability of C-4 plants, including maize, to circumvent the negative effects of gases such as oxygen on the production of sugars in photosynthesis.

(E) Some of the world's most productive crop plants, including maize, have evolved complex, effective mechanisms to prevent atmospheric gases that could bind competitively to rubisco from entering the plants' leaves.

22. Which one of the following most accurately describes the organization of the material presented in the second and third paragraphs of the passage?

(A) The author suggests that the widespread cultivation of a particular crop is due to its high yield, explains its high yield by describing the action of a particular enzyme in that crop, and then outlines the reasons for the evolution of that enzyme.

(B) The author explains some aspects of a biochemical process, describes a naturally occurring hindrance to that process, and then describes an evolutionary solution to that hindrance in order to explain the productivity of a particular crop.

(C) The author describes a problem inherent in certain biochemical processes, scientifically explains two ways in which organisms solve that problem, and then explains the evolutionary basis for one of those solutions.

(D) The author describes a widespread cultural phenomenon involving certain uses of a type of plant, explains the biochemical basis of the phenomenon, and then points out that certain other plants may be used for similar purposes.

(E) The author introduces a natural process, describes the biochemical reaction that is widely held to be the mechanism underlying the process, and then argues for an alternate evolutionary explanation of that process.

GO ON TO THE NEXT PAGE.

23. Assuming that all other relevant factors remained the same, which one of the following, if it developed in a species of plant that does not have C-4 photosynthesis, would most likely give that species an advantage similar to that which the author attributes to C-4 plants?

(A) Water is split into its constituent elements in specialized chlorophyll-containing structures in the bundle sheath cells.
(B) An enzyme with which oxygen cannot bind performs the role of rubisco.
(C) The vascular structures of the leaf become impermeable to both carbon dioxide gas and oxygen gas.
(D) The specialized chlorophyll-containing structures in which water is split surround the vascular structures of the leaf.
(E) An enzyme that does not readily react with carbon dioxide performs the role of rubisco in the green leaf cells.

24. The author's reference to "all other atmospheric gases" in line 46 plays which one of the following roles in the passage?

(A) It indicates why certain atmospheric conditions can cause excess oxygen to build up and thus hinder photosynthesis in non-C-4 plants as described in the previous paragraph.
(B) It supports the claim advanced earlier in the paragraph that oxygen is not the only atmospheric gas whose presence in the leaf can interfere with photosynthesis.
(C) It supports the conclusion that non-C-4 photosynthesis makes use of several atmospheric gases that C-4 photosynthesis does not use.
(D) It explains why carbon dioxide molecules undergo the transformations described later in the paragraph before participating in photosynthesis in C-4 plants.
(E) It advances a broader claim that oxygen levels remain constant in C-4 plants in spite of changes in atmospheric conditions.

25. The passage contains information sufficient to justify inferring which one of the following?

(A) In rice plants, atmospheric gases are prevented from entering the structures in which water is split into its constituent elements.
(B) In rice plants, oxygen produced from split water molecules binds to another type of molecule before being released into the atmosphere.
(C) Rice is an extremely productive crop that nourishes large segments of the world's population and is cultivated by various widely separated cultures.
(D) In rice plants, rubisco is isolated in the bundle sheath cells that surround the vascular structures of the leaves.
(E) Although rice is similar to maize in productivity and nutritive value, maize is the more widely cultivated crop.

26. The author of the passage would be most likely to agree with which one of the following statements?

(A) Maize's impressive productivity cannot be understood without an understanding of its cultural influences.
(B) Maize is an example of a plant in which oxygen is not released as a by-product of photosynthesis.
(C) Maize's high yields are due not only to its use of C-4 but also to its ability to produce large quantities of rubisco.
(D) Until maize was introduced to Europeans by Native Americans, European populations lacked the agricultural techniques required for the cultivation of C-4 plants.
(E) Maize's C-4 photosynthesis is an example of an effective evolutionary adaptation that has come to benefit humans.

27. The passage provides the most support for which one of the following statements?

(A) In many plants, rubisco is not isolated in airtight tissues in the center of the leaf.
(B) A rubisco molecule contains four carbon atoms.
(C) Rubisco is needed in photosynthesis to convert carbon dioxide to a nongas molecule.
(D) In maize, rubisco helps protect against the detrimental effects of oxygen buildup in the leaves.
(E) Rubisco's role in the C-4 process is optimized when oxygen levels are high relative to carbon dioxide levels.

S T O P

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DO NOT WORK ON ANY OTHER SECTION IN THE TEST.