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## Exercise 31

- High Towers, a company that occupies several office buildings, is considering installing new energyefficient 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.
- 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.
- 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.

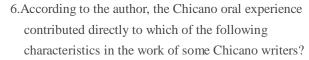








Although a historical lack of access to formal Spanishlanguage education initially limited the opportunities of some Chicanos to hone their skills as writers of Spanish, their bilingual culture clearly fostered an exuberant and compelling oral tradition. It has thus generally been by way of the emphasis on oral literary creativity that these Chicano writers, whose English-language works are sometimes uninspired, developed the powerful and arresting language that characterized their Spanishlanguage 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)



- (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
- 10. In the context in which it appears, "ambivalent " most nearly means
  - Subversive
  - ® unambiguous
  - © equivocal
  - disreputable
  - **©** contradictory









