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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 movements 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

2. Which of the following, if true, would call into question Hardy's principle of animal exclusion?
(A) Zooplankton are not the only organisms that are affected by phytoplankton repellents.
(B) Zooplankton exclusion is unrelated to phytoplankton population density.
(C) Zooplankton population density is higher during some parts of the year than during others.
(D) Net phytoplankton are more likely to exclude zooplankton than are nannoplankton.
(E) Phytoplankton numbers can be strongly affected by environmental factors.

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

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

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

4. 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

5. 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) The 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.

The belief that art originates in intuitive rather than rational faculties was worked out historically and philosophically in the somewhat wearisome volumes of
Line Benedetto Croce, who is usually considered the originator
5 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
10 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
15 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)

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

A all abstract universal ideas are ideas of complex relations
B some record or evidence of the thought of the *tlamatinime* exists
C 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
Line scientists must maintain an appropriate skepticism. Thus,
5 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
10 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
15 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
20 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


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梅晗 雅思阅读和词汇课程帮助超过10万人成功雀聘
黄瀚生 学生眼爱的“小黄人” 自创美式happy教学法 曾获得美国总统学术卓越奖
乐尊 雅思阅读九段级高手 教学经验13年，培训学员超过15万人
彭新松 数十万学子公认的雅思听力教学大师
GRE名师
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唐璜 中国SAT语法教学权威 英国利兹大学社会学硕士 GMAT、SAT语法顶级大咖
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SAT名师
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