TPO 5

READING

MINERALS AND PLANTS

Paragraph 1:

1. According to Paragraph1, what is true of plants that can grow in serpentine soil?

A. They absorb micronutrients unusually well.
B. They require far less calcium than most plants do.
C. They are able to absorb nitrogen in its elemental state.
D. They are typically crops raised for food.

Research has shown that certain minerals are required by plants for normal growth and development. The soil is the source of these minerals, which are absorbed by the plant with the water from the soil. Even nitrogen, which is a gas in its elemental state, in normally absorbed from the soil as nitrate ions. Some soils are notoriously deficient in micro nutrients and are therefore unable to support most plant life. So-called serpentine soils, for example, are deficient in calcium, and only plants able to tolerate low levels of this mineral can survive. In modern agriculture, mineral depletion of soils is a major concern, since harvesting crops interrupts the recycling of nutrients back to the soil.

Paragraph 2:

2. The word "exhibit" in the passage is closest in meaning to

A. fight off
B. show
C. cause
D. spread

Mineral deficiencies can often be detected by specific symptoms such as chlorosis (loss of chlorophyll resulting in yellow or white leaf issue), necrosis (isolated dead patches), anthocyanin formation (development of deep red pigmentation of leaves or stem), stunted growth, and development of woody tissue in an herbaceous plant. Soils are most commonly deficient in nitrogen and phosphorus. Nitrogen-deficient plants exhibit many of the symptoms just described. Leaves develop chlorosis; stems are short and slender, and anthocyanin discoloration occurs on stems, petioles, and lower leaf surfaces. Phosphorus-deficient plants are often stunted, with leaves turning a

3. According to Paragraph2, which of the following symptoms occurs in phosphorus-deficient plants but not in plants deficient in nitrogen or iron?

A. Chlorosis on leaves
B. Change in leaf pigmentation to a dark shade of green
C. Short, stunted appearance of stems
D. Reddish pigmentation on the leaves or stem

4. According to Paragraph2, a symptom of iron deficiency is the presence in young leaves of
A. Deep red discoloration between the veins.
B. White or yellow tissue between the veins.
C. Dead spots between the veins.
D. Characteristic dark green veins.

characteristic dark green, often with the accumulation of anthocyanin. Typically, older leaves are affected first as the phosphorus is mobilized to young growing tissue. Iron deficiency is characterized by chlorosis between veins in young leaves.

Paragraph 3:

5. The word "facilitates" in the passage is closest in meaning to
A. slows down
B. affects
C. makes easier
D. focuses on

6. According to Paragraph3, what is the advantage of hydroponics for research on nutrient deficiencies in plants?
A. It allows researchers to control what nutrients a plant receives.
B. It allows researchers to observe the growth of a large number of plants simultaneously.
C. It is possible to directly observe the roots of plants.
D. It is unnecessary to keep misting plants with nutrient solutions.

7. The word "suspended" in the passage is closest in meaning to
A. grown
B. protected
C. spread out
D. hung

Much of the research on nutrient deficiencies is based on growing plants hydroponically, that is, in soilless liquid nutrient solutions. This technique allows researchers to create solutions that selectively omit certain nutrients and then observe the resulting effects on the plants. Hydroponics has applications beyond basic research, since it facilitates the growing of greenhouse vegetables during winter. Acroponics, a technique in which plants are suspended and the roots misted with a nutrient solution, is another method for growing plants without soil.

While mineral deficiencies can limit the growth of plants, an overabundance of certain minerals can be toxic and can also limit growth. Saline soils, which have high concentrations of sodium chloride and other salts, limit plant growth, and research continues to focus on developing salt-tolerant varieties of agricultural crops. Research has focused on the toxic effects of heavy metals such as lead, cadmium, mercury, and aluminum; however, even copper and zinc, which are essential elements, can become toxic in high concentrations. Although most plants cannot survive in these soils, certain plants have the ability to tolerate high levels of these minerals.

Paragraph 5:

8. Why does the author mention herbs, shrubs, and trees?
A. To provide examples of plant types that cannot tolerate high levels of harmful

Scientists have known for some time that certain plants, called hyper accumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyper accumulators identified that 75 percent

minerals.

B. To show why so many plants are hyper accumulators.
C. To help explain why hyper accumulators can be found in so many different places.
D. To emphasize that hyper accumulators occur in a wide range of plant types.

9. The word "afford" in the passage is closest in meaning to

A. offer
B. prevent
C. increase
D. remove

of them amassed nickel, cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■Hyper accumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyper accumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

Paragraph 6:

10. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

A. Before considering phytoremediation, hyper accumulating species of plants local to the target area must be identified.
B. The investigation begins with an evaluation of toxic sites in the target area to determine the extent of contamination.
C. The first step in phytoremediation is the planting of hyper accumulating plants in the area to be cleaned up.
D. Mines and irrigation ponds can be kept from becoming contaminated by planting hyper accumulating species in targeted areas.

Only recently have investigators considered using these plants to clean up soil and waste sites that have been contaminated by toxic levels of heavy metals – an environmentally friendly approach known as phytoremediation. This scenario begins with the planting of hyper accumulating species in the target area, such as an abandoned mine or an irrigation pond contaminated by runoff. Toxic minerals would first be absorbed by roots but later relocated to the stem and leaves. A harvest of the shoots would remove the toxic compounds off site to be burned or composted to recover the metal for industrial uses. After several years of cultivation and harvest, the site would be restored at a cost much lower than the price of excavation and reburial, the standard practice for remediation of contaminated soils. For examples, in field trials, the plant alpine pennycress removed zinc and cadmium from soils near a zinc smelter, and Indian mustard, native to Pakistan and India, has been effective in reducing levels of selenium salts by 50 percent in contaminated soils.

11. It can be inferred from Paragraph6 that compared with standard practices for remediation of contaminated soils, phytoremediation

A. does not allow for the use of the removed minerals for industrial purposes.
B. can be faster to implement
C. is equally friendly to the environment
D. is less suitable for soils that need to be used within a short period of time.

12. Why does the author mention Indian mustard?

A. To warn about possible risks involved in phytoremediation
B. To help illustrate the potential of phytoremediation
C. To show that hyper accumulating plants grow in many regions of the world
D. To explain how zinc contamination can be reduced.

Paragraph 5:

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

Certain minerals are more likely to be accumulated in large quantities than others.

Where could the sentence best fit?

14. Plants need to absorb certain minerals from the soil in adequate quantities for normal growth and development.

-
-
-

Answer Choices

A. A. Some plants are able to accumulate extremely high levels of certain minerals and thus can be used to clean up soils contaminated with toxic levels of these minerals.
B. Though beneficial in lower levels, high levels of salts, other minerals, and heavy metals can be harmful to plants.
C. When plants do not absorb sufficient amounts of essential minerals, characteristic abnormalities result.
D. Because high concentrations of sodium chloride and other salts limit growth in most plants, much research has been done in an effort to develop salt-tolerant agricultural crops.
E. Some plants can tolerate comparatively low levels of certain minerals, but such plants are of little use for recycling nutrients back into depleted soils.
F. Mineral deficiencies in many plants can be cured by misting their roots with a nutrient solution or by transferring the plants to a soilless nutrient solution.

Scientists have known for some time that certain plants, called hyper accumulators, can concentrate minerals at levels a hundredfold or greater than normal. ■ A survey of known hyper accumulators identified that 75 percent of them amassed nickel, cobalt, copper, zinc, manganese, lead, and cadmium are other minerals of choice. ■Hyper accumulators run the entire range of the plant world. ■ They may be herbs, shrubs, or trees. ■ Many members of the mustard family, spurge family, legume family, and grass family are top hyper accumulators. Many are found in tropical and subtropical areas of the world, where accumulation of high concentrations of metals may afford some protection against plant-eating insects and microbial pathogens.

THE ORIGIN OF THE PACIFIC ISLAND PEOPLE

The greater Pacific region, traditionally called Oceania, consists of three cultural areas: Melanesia, Micronesia, and Polynesia. Melanesia, in the southwest Pacific, contains the large islands of New Guinea, the Solomons, Vanuatu, and New Caledonia. Micronesia, the area north of Melanesia, consists primarily of small scattered islands. Polynesia is the central Pacific area in the great triangle defined by Hawaii, Easter Island, and New Zealand. Before the arrival of Europeans, the islands in the two largest cultural areas, Polynesia and Micronesia, together contained a population estimated at 700,000.

Paragraph 1:

1. According to Paragraph1, all of the following are true statements about Melanesia, Micronesia, and Polynesia EXCEPT

A. Collectively, these regions are traditionally known as Oceania.
B. These islands of Micronesia are small and spread out
C. Hawaii, Easter Island, and New Zealand mark the boundaries of Polynesia.
D. Melanesia is situated to the north of Micronesia.

Speculation on the origin of these Pacific islanders began as soon as outsiders encountered them, in the absence of solid linguistic, archaeological, and biological data, many fanciful and mutually exclusive theories were devised. Pacific islanders ere variously thought to have come from North America, South America, Egypt, Israel, and India, as well as Southeast Asia. ■Many older theories implicitly deprecated the navigational abilities and overall cultural creativity of the Pacific islanders. ■For example, British anthropologists G. Elliot Smith and W. J. Perry assumed that only Egyptians would have been skilled enough to navigate and colonize the Pacific. ■They inferred that the Egyptians even crossed the Pacific to found the great civilizations of the New World (North and South America). ■ In 1947 Norwegian adventurer Thor Heyerdahl drifted on a balsa-log raft westward with the winds and currents

Paragraph 2:

2. By stating that the theories are mutually exclusive the author means that

A. if one of the theories is true, then all the others must be false
B. the differences between the theories are unimportant
C. taken together, the theories cover all possibilities
D. the theories support each other

3. The word "overwhelming" in the passage is closest in meaning to

A. powerful
B. favorable
C. current
D. reasonable

4. According to Paragraph2, which of the following led some early researchers to believe that the Pacific islanders originally came from Egypt?

A. Egyptians were known to have founded other great civilizations.
B. Sailors from other parts of the world were

believed to lack the skills needed to travel across the ocean.

C. Linguistic, archaeological, and biological data connected the islands to Egypt.
D. Egyptian accounts claimed responsibility for colonizing the Pacific as well as the Americas.

5. Which of the following can be inferred from Paragraph2 about early theories of where the first inhabitants of the Pacific islands came from?

A. They were generally based on solid evidence.
B. They tried to account for the origin of the characteristic features of the languages spoken by Pacific islanders.
C. They assumed that the peoples living in Southeast Asia did not have the skills needed to sail to the Pacific islands.
D. They questioned the ideas of G. Elliot Smith and W. J. Perry.

Paragraph 3:

6. The word "implements" in the passage is closest in meaning to

A. skills
B. tools
C. opportunities
D. practices

7. All of the following are mentioned in Paragraph3 as required for successful colonization of the Pacific islands EXCEPT

A. knowledge of various Austronesian languages
B. a variety of fishing techniques
C. navigational skills
D. knowledge of plant cultivation

8. In Paragraph3, why does the author provide information about the types of crops grown and boats used in Southeast Asia during the period around 5000 B. C. E.?

A. To evaluate the relative importance of agriculture and fishing to early Austronesian peoples.
B. To illustrate the effectiveness of archaeological and linguistic methods in discovering details about life in ancient

across the Pacific from South America to prove his theory that Pacific islanders were Native Americans (also called American Indians). Later Heyerdahl suggested that the Pacific was peopled by three migrations: by Native Americans from the Pacific Northwest of North America drifting to Hawaii, by Peruvians drifting to Easter Island, and by Melanesians. In 1969 he crossed the Atlantic in an Egyptian style reed boat to prove Egyptian influences in the Americas. Contrary to these theorists, the overwhelming evidence of physical anthropology, linguistics, and archaeology shows that the Pacific islanders came from Southeast Asia and were skilled enough as navigators to sail against the prevailing winds and currents.

The basic cultural requirements for the successful colonization of the Pacific islands include the appropriate boat-building, sailing, and navigation skills to get to the islands in the first place, domesticated plants and gardening skills suited to often marginal conditions, and a varied inventory of fishing implements and techniques. It is now generally believed that these prerequisites originated with peoples speaking Austronesian languages (a group of several hundred related languages) and began to emerge in Southeast Asia by about 5000 B. C.E. The culture of that time, based on archaeology and linguistic reconstruction, is assumed to have had a broad inventory of cultivated plants including taro, yarns, banana, sugarcane, breadfruit, coconut, sago, and rice, Just as important, the culture also possessed the basic foundation for an effective maritime adaptation, including outrigger canoes and a variety of fishing techniques that could be effective for overseas voyaging.

times.

C. To contrast living conditions on the continent of Asia with living conditions on the Pacific islands.
D. To demonstrate that people from this region had the skills and resources necessary to travel to and survive on the Pacific islands.

Paragraph 4:

9. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage?

Incorrect choices change the meaning in important ways or leave out essential information.

A. Some people have argued that the Pacific was settled by traders who became lost while transporting domesticated plants and animals.
B. The original Polynesian settlers were probably marooned on the islands, but they may have been joined later by carefully prepared colonization expeditions.
C. Although it seems reasonable to believe that colonization expeditions would set out fully stocked, this is contradicted by much of the evidence.
D. The settlement of the Pacific islands was probably intentional and well planned rather than accidental as some people have proposed.

10. The word "undisputed" in the passage is closest in meaning to

A. mysterious
B. unexpected
C. acknowledged
D. significant

11. According to Paragraph4, which of the following is NOT an explanation for why a group of people might have wanted to colonize the Pacific islands?

A. As their numbers increased, they needed additional territory.
B. The winds and currents made the islands easy to reach.
C. The political situation at home made emigration desirable,
D. They found exploration challenging and

Contrary to the arguments of some that much of the pacific was settled by Polynesians accidentally marooned after being lost and adrift, it seems reasonable that this feat was accomplished by deliberate colonization expeditions that set out fully stocked with food and domesticated plants and animals. Detailed studies of the winds and currents using computer simulations suggest that drifting canoes would have been a most unlikely means of colonizing the Pacific. These expeditions were likely driven by population growth and political dynamics on the home islands, as well as the challenge and excitement of exploring unknown waters. Because all Polynesians, Micronesians, and many Melanesians speak Austronesian languages and grow crops derived from Southeast Asia, all these peoples most certainly derived from that region and not the New World or elsewhere. The undisputed pre-Columbian presence in Oceania of the sweet potato, which is a New World domesticate, has sometimes been used to support Heyerdahl's "American Indians in the Pacific" theories. However, this is one plant out of a long list of Southeast Asian domesticates. As Patrick Kirch, an American anthropologist, points out, rather than being brought by rafting South Americans, sweet potatoes might just have easily been brought back by returning Polynesian navigators who could have reached the west coast of South America.

exciting.

12. Why does the author mention the views of "Patrick Kirch"?

A. To present evidence in favor of Heyerdahl's idea about American Indians reaching Oceania
B. To emphasize the familiarity of Pacific islanders with crops from many different regions of the world
C. To indicate that supposed proof for Heyerdahl's theory has an alternative explanation.
D. To demonstrate that some of the same crops were cultivated in both South America and Oceania.

Paragraph 2:

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

Later theories concentrate on journeys in the other direction.

Where could the sentence best fit?

14.

Together, Melanesia, Micronesia, and Polynesia make up the region described as the Pacific islands, or Oceania.

- ●
- ●
- ●

Answer Choices

A. The first Europeans to reach the area assumed that the islands' original inhabitants must have drifted to Oceania, perhaps from Egypt or the Americas.
B. It is now believed that the process of colonization required a great deal of skill, determination, and planning and could not have happened by chance.
C. Using linguistic and archaeological evidence, anthropologists have determined that the first Pacific islanders were Austronesian people from Southeast Asia.
D. New evidence suggests that, rather than being isolated, Pacific islanders engaged in trade and social interaction with peoples living in Southeast Asia.

Speculation on the origin of these Pacific islanders began as soon as outsiders encountered them, in the absence of solid linguistic, archaeological, and biological data, many fanciful and mutuallyexclusive theories were devised. Pacific islanders ere variously thought to have come from North America, South America, Egypt, Israel, and India, as well as Southeast Asia. ■Many older theories implicitly deprecated the navigational abilities and overall cultural creativity of the Pacific islanders. ■For example, British anthropologists G. Elliot Smith and W. J. Perry assumed that only Egyptians would have been skilled enough to navigate and colonize the Pacific. ■They inferred that the Egyptians even crossed the Pacific to found the great civilizations of the New World (North and South America). ■ In 1947 Norwegian adventurer Thor Heyerdahl drifted on a balsa-log raft westward with the winds and currents across the Pacific from South America to prove his theory that Pacific islanders were Native Americans (also called American Indians). Later Heyerdahl suggested that the Pacific was peopled by three migrations: by Native Americans

E. Although early colonizers of the islands probably came from agriculture-based societies, they were obliged to adopt an economy based on fishing
F. Computer simulations of the winds and currents in the Pacific have shown that reaching the Pacific islands was probably much easier than previously thought.

from the Pacific Northwest of North America drifting to Hawaii, by Peruvians drifting to Easter Island, and by Melanesians. In 1969 he crossed the Atlantic in an Egyptian style reed boat to prove Egyptian influences in the Americas. Contrary to these theorists, the overwhelming evidence of physical anthropology, linguistics, and archaeology shows that the Pacific islanders came from Southeast Asia and were skilled enough as navigators to sail against the prevailing winds and currents.

THE CAMBRIAN EXPLOSION

Paragraph 1:

1. The word "significant" in the passage is closest in meaning to
A. Numerous
B. important
C. unexplained
D. sudden

2. The word "relatively" in the passage is closest in meaning to
A. surprisingly
B. collectively
C. comparatively
D. characteristically

3. The word "diversification" in the passage is closest in meaning to
A. emergence of many varieties
B. steady decline in number
C. gradual increase in body size
D. sudden disappearance

Paragraph 2:

4. The period discussed in the passage is referred to as an explosion because it
A. occurred 0.6 billion years ago, late in

The geologic timescale is marked by significant geologic and biological events, including the origin of Earth about 4.6 billion years ago, the origin of life about 3.5 billion years ago, the origin of eukaryotic life-forms (living things that have cells with true nuclei) about 1.5 billion years ago, and the origin of animals about 0.6 billion years ago. The last event marks the beginning of the Cambrian period. Animals originated relatively late in the history of Earth – in only the last 10 percent of Earth's history. During a geologically brief 100-million-year period, all modern animal groups (along with other animals that are now extinct) evolved. This rapid origin and diversification of animals is often referred to as "the Cambrian explosion."

One interpretation regarding the absence of fossils during this important

Earth's history

B. was characterized by the unusually fast evolution of many new life-forms.
C. Was characterized by widespread animal extinction
D. Was characterized by violent volcanic eruptions

5. According to Paragraph2, which of the following is NOT a question that paleontologists asked about the Cambrian explosion?

A. Why was the origin of life a simple step in Earth's history?
B. Why did it take so long for multicellular organisms to develop?
C. Why did animal life evolve so rapidly?
D. Why does the fossil record lack evidence of animal evolution during that time?

6. Which of the following best describes the relationship between Paragraph2 and Paragraph3?

A. Paragraph2 puts forward several scientific claims, one of which is rejected in Paragraph3
B. Paragraph2 poses several questions, and Paragraph3offers a possible answer to one of them
C. Paragraph2 presents outdated traditional views, while Paragraph3presents the current scientific conclusions.
D. Paragraph2 introduces a generalization that is illustrated by specific examples in Paragraph3

7. The word "promote" in the passage is closest in meaning to

A. complicate
B. prevent
C. encourage
D. affect

100-million-year period is that early animals were soft bodied and simply did not fossilize. ■Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. ■Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition.■In fact, fossil beds containing soft-bodied animals have been known for many years. ■

One interpretation regarding the absence of fossils during this important 100-million-year period is that early animals were soft bodied and simply did not fossilize. Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition. In fact, fossil beds containing soft-bodied animals have been known for many years.

Paragraph 4:

8. Which of the following is NOT mentioned in Paragraph4 as being true of the Ediacara formation?

A. It contains fossils that date back to the Precambrian period.
B. It contains only soft-bodied animal fossils.
C. It is located on a single site in Australia.
D. It does not contain any fossils of the ancestors of modern animals.

The Ediacara fossil formation, which contains the oldest known animal fossils, consists exclusively of soft-bodied forms. Although named after a site in Australia, the Ediacara formation is worldwide in distribution and dates to Precambrian times. This 700-million-year-old formation gives few clues to the origins of modern animals, however, because paleontologists believe it represents an evolutionary experiment that failed. It contains no ancestors of modern animal groups.

Paragraph 5:

9. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

A. The animals found in the Tommotian fossil bed were once thought to belong to a variety of modern animal groups, but now they are thought to have descended from a single group.
B. Animals in the Tommotian fossil beds were initially assigned to modern animal groups but are now thought to belong to groups that emerged and died out during the Cambrian period.
C. Though at first they thought otherwise, paleontologists now agree that the animals in the Tommotian have body forms from which modern animals have descended.
D. It is unclear whether the Tommotian fossils from the early Cambrian period represent unique body forms or whether they should be assigned to various modern animal groups.

A slightly younger fossil formation containing animal remains is the Tommotian formation, named after a locale in Russia. It dates to the very early Cambrian period, and it also contains only soft-bodied forms. At one time, the

Paragraph 6:

10. Why does the author mention Anomalocans and Wiwaxia?

A. To contrast predators with animals that eat plants such as algae
B. To question the effects of rapid mud slides on fossilization

C. To suggest that much is still unknown about animals found in the Burgess Shale
D. To provide examples of fossils that cannot be assigned to a modern animal group

11. Sidneyia is an example of
A. a relative of Anomalocaris and Wiwaxia
B. a previously unknown Burgess Shale animal
C. an extinct member of a currently existing category of animals
D. an animal that cannot be assigned to any modern animal group

Paragraph 7:

12. What can be inferred from Paragraph7 about why the Cambrian explosion is so unusual?
A. It generated new ecological niches through the extinction of many unique animals.
B. It was a period of rapid evolution, and evolution is often thought of as a slow process.
C. It is a period whose evolutionary sequences are clearly marked.
D. It generated a very large number of ancient fossil beds containing soft-bodied animals.

Paragraph 3:

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage.

It is relatively rare because the fossilization of soft-bodied animals requires a special environment.

Where could the sentence best fit?

animals present in these fossil beds were assigned to various modern animal groups, but most paleontologists now agree that all Tommotian fossils represent unique body forms that arose in the early Cambrian period and disappeared before the end of the period, leaving no descendants in modern animal groups.

A third fossil formation containing both soft-bodied and hard-bodied animals provides evidence of the result of the Cambrian explosion. This fossil formation, called the Burgess Shale, is in Yoho National Park in the Canadian Rocky Mountains of British Columbia. Shortly after the Cambrian explosion, mud slides rapidly buried thousands of marine animals under conditions that favored fossilization. These fossil beds provide evidence of about 32 modern animal groups, plus about 20 other animal body forms that are so different from any modern animals that they cannot be assigned to any one of the modern groups. These unassignable animals include a large swimming predator called *Anomalocaris* and a soft-bodied animal called *Wiwaxia*, which ate detritus or algae. The Burgess Shale formation also has fossils of many extinct representatives of modern animal groups. For example, a well-known Burgess Shale animal called *Sidneyia* is a representative of a previously unknown group of arthropods (a category of animals that includes insects, spiders, mites, and crabs).

Fossil formations like the Burgess Shale show that evolution cannot always be thought of as a slow progression. The Cambrian explosion involved rapid evolutionary diversification, followed by the extinction of many unique animals. Why was this evolution so rapid? No one really knows. Many zoologists believe

14.

The term "Cambrian explosion" refers to the geologically brief period during which all modern animal groups evolved.

-
-
-

Answer Choices

A. Little is known about the stages of evolution during the Cambrian period, in part because early animals were soft bodied and could fossilize only under particular conditions.
B. While animal fossils from before the Cambrian explosion have no modern descendants, many animals that evolved during the Cambrian explosion can be assigned to modern groups.
C. The Cambrian period is significant because it marks the emergence of eukaryotic life-forms – organisms that have cells with true nuclei
D. The Ediacara fossil formation provides the most information about the Cambrian explosion, while the earlier, Tommotian and Burgess Shale formations give clues about Precambrian evolution.
E. Zoologists are awaiting the discovery of a 600-million-year-old fossil formation in order to be able to form a theory of how animal evolution progressed.
F. Although the reasons for the rapid evolution of animals during the Cambrian period are not known, one proposed explanation is an abundance of niches with a lack of competitors.

that it was because so many ecological niches were available with virtually no competition from existing species. Will zoologists ever know the evolutionary sequences in the Cambrian explosion? Perhaps another ancient fossil bed of soft-bodied animals from 600-million-year-old seas is awaiting discovery.

One interpretation regarding the absence of fossils during this important 100-million-year period is that early animals were soft bodied and simply did not fossilize. ■Fossilization of soft-bodied animals is less likely than fossilization of hard-bodied animals, but it does occur. ■Conditions that promote fossilization of soft-bodied animals include very rapid covering by sediments that create an environment that discourages decomposition.■In fact, fossil beds containing soft-bodied animals have been known for many years. ■

LISTENING

1. What do the speakers mainly discuss?

A. Why the woman has little in common with her roommates

B. How the woman can keep up in her academic studies

C. The woman's adjustment to life at the university

D. The woman's decision to transfer to another university

2. Why does the woman mention her hometown?

A. To draw a contrast to her current situation

B. To acknowledge that she is accustomed to living in big cities

C. To indicate that she has known some people on campus for a long time

D. To emphasize her previous success in academic studies

3. What does the woman imply about incident that occurred in her sociology class?

A. She was embarrassed because she gave an incorrect answer

B. She was upset because the professor seemed to ignore her

C. She was confused by the organization of the professor' s lecture

D. She was surprised by the comments of the other students

4. According to the counselor, why should the woman visit her professor's office? Click on 2 answers.

A. To offer a compliment

B. To offer to help other students

C. To introduce herself

D. To suggest ways of making the class more personal

5. What does the woman imply about joining the string quartet?

A. It would enable her to continue a hobby she gave up when she was ten

B. It would allow her to spend more time in her major area of study

C. It would help her stop worrying about her academic studies

D. It would be a way to meet students with similar interests.

6. What is the main purpose of the lecture?

A. To introduce a method that can help students remember new information

B. To introduce a way to study how information passes from one person to another

C. To explain the differences between biological information and cultural information

D. To explain the differences between stories, songs, and other pieces of information

7. Why does the professor tell the story about alligators?

A. To explain the difference between true and false stories

B. To draw an analogy between alligator reproduction and cultural transmission

C. To give an example of a piece of information that functions as a meme

D. To show how a story can gradually change into a song

8. According to the professor, which of the following are examples of meme transfer? Click on 2 answers.

A. Telling familiar stories

B. Sharing feelings

C. Composing original music

D. Learning a scientific theory

9. What example does the professor give of a meme's longevity?

A. A story has been changing since it first appeared in the 1930s

B. A person remembers a story for many years

C. A gene is passed on through many generations without changing

D. A song quickly becomes popular all over the world

10. What does the professor compare to a housefly laying many eggs?

A. A child learning many different ideas from or her parents

B. Alligators reproducing in New York sewers

C. Different people remembering different versions of a story

D. A person singing the "Twinkle, twinkle" song many times

11. Why does the professor say this

A. To explain why some memes do not change much

B. To ask the students for their opinion about songs as memes

C. To acknowledge a problem with the meme theory

D. To ask the student to test an idea about memes

12. What is the main purpose of the lecture?

A. To explain why scientists disagree about the age of the Moon

B. To present arguments in favor of another Moon landing

C. To explain how scientists discovered a crater on the far side of the Moon

D. To review some finding of a recent mission to the Moon

13. What does the professor imply about the spacecraft Clementine?

A. .It sent back the first color photographs of the Moon

B. It was powered by solar energy

C. It landed in the far side of the Moon

D. It flew over the Moon's polar regions

14. Why does the professor mention the Moon's mantle?

A. To explain why scientists believe that meteor impacts cannot affect the Moon's mantle

B. To explain what kind of information scientists hope to obtain from the mantle

C. To point out that the Moon's crust and mantle are made of similar materials

D. To point out that the Moon's mantle and Earth's mantle have different compositions

15. Why is the South Pole-Aitken Basin thought to be exceptionally old?

A. The walls of the Basin are more reflective than those of most other craters

B. Testing of rocks from the Basin's floor proves them to be as old as the Moon itself

C. Many small craters have been detected at the bottom of the Basin

D. A large amount of dust has been detected in and around the Basin

16. Why does the professor consider it important to find out if water ice exists on the Moon? Click on 2 answers.

A. Water ice could be processed to provide breathable air for astronauts

B. One component of water ice could be used as a fuel for rockets

C. Water ice could contain evidence of primitive life on the Moon

D. Water ice could be tested to find out what type of meteors crashed into the Moon

17. What does the professor imply when he says this

A. The current age estimates for the South Pole-Aitken Basin are based on incorrect assumptions.

B. The technology to analyze Moon rocks has not advanced much since the days of the Moon landings

C. Too few of the original Moon-rock samples were dated accurately

D. Only by testing samples from South Pole-Aitken Basin can its age be precisely determined

18. What is the conversation mainly about?

A. An assignment about which the student would like advice

B. Concerns as to whether the student should be in the professor's course

C. The selection of films to be viewed by students in a film theory course

D. The structure and sequence of courses in the Film Department

19. What is the professor's attitude toward the student's high school film course?

A. He does not consider it satisfactory preparation for the class he teaches

B. He does not think that literary works should be discussed in film classes

C. He believes that this type of course often confuses inexperienced students

D. He feels that the approach taken in this course is the best way to learn about film

20. Why was the student permitted to sign up for professor's film theory course?

A. Her high school course fulfilled the requirement for previous course work

B. The computer system that usually blocks students was not working properly

C. An employee in the department did not follow instructions

D. The professor made an exception in her case

21. Why does the professor decide to allow the student in his class? Click on 2 answers.

A. She needs to take the course in order to graduate

B. He is impressed with her eagerness to continue

C. She convinces him that she does have adequate preparation for the course

D. He learns that she is nor studying film as her main course of study

22. What does the professor advise the student to so in order to keep up with the class she is in?

A. Take the introductory course

B. Watch some video recordings

C. Do extra reading

D. Drop out of her marketing class

23. What is the main purpose of the lecture?

A. To discuss recent innovations in laboratory equipment

B. To give an example of a practical use for a particular scientific technique

C. To familiarize students with the chemical composition of paint pigments

D. To show how researchers were able to restore a particular work of art

24. What does the professor imply when he mentions an art historian?

A. Art historians have been learning how to use spectroscopes

B. Scientists need to learn how art historians analyze paintings

C. Confirming the authenticity of artworks requires collaboration

D. Spectroscopic analysis can help identify a painter's techniques

25. Why does the professor discuss the presence of zinc in paint pigments?

A. To explain why some paints may deteriorate over the course of time

B. To stress the need for caution when attempting to restore old artworks

C. To show how pigments differ from varnishes and binding agents

D. To show how spectroscopy can help establish the age of a painting

26. According to the professor, what is the primary advantage of spectroscopy over other laboratory methods for analyzing artworks?

A. It does not damage the artworks

B. It provides a more accurate analysis than other methods do

C. It uses equipment that can be transferred to other locations

D. It can be used by individuals with little scientific training

27. What is one way the professor mention that can help with art restoration?

A. By re-creating the pigments and binding agents used by artists of earlier eras

B. By removing pigments and binding agents that dissolve paintings over time

C. By creating protective coatings of paint that do not damage original paintings

D. By developing ways to safely remove paint added by previous restorers

28. Why does the professor say this:

A. He is searching for a synonym for the term

B. He is not sure how much information the student need

C. He is going to briefly address a related topic

D. He is giving the students a writing assignment

29. What is the lecture mainly about?

A. Oral traditions in folktales and fairy tales

B. Common characters and plots in folktales and fairy tales

C. Differences between folktales and fairy tales

D. Hidden meaning in folktales and fairy tales

30. What does the professor mean when he says that folktales are communal?

A. They vary little form one community to another

B. They serve to strengthen tiles among individuals within a community

C. They relate important events in the history of a community

D. They can be adapted to meet the needs of a community

31. Why does the professor clarify the concept of a "fairy tale"?

A. To explain the origins of the term "fairy tale"

B. To eliminate a possible definition of the term" fairy tale"

C. To support a claim about the function of fairy tales

D. To indicate that fairies are a major element in fairy tale

32. What does the professor say about the setting of fairy tales?

A. The tales are usually set in a nonspecific location

B. The location is determined by the country of origin of a tale

C. The tales are set in a location familiar to the author

D. A storyteller varies the location of a tale depending on the audience

33. In the lecture, the professor discusses characteristics of folktales and fairy tales, indicate the characteristics of each type of the tale. Click in the correct boxes. This question is worth two points.

Folktales

Fairy tales

A. Their appeal is now mainly to children

B. The plot is the only stable element

C. The tales are transmitted orally

D. There is one accepted version

E. Characters are well developed

F. The language is relatively formal

34. Why does the professor say this

A. To support the student's statement

B. To ask the student to clarify her statement

C. To find out if the students know what story the line comes from

D. To clarify the relationship between time and space in fairy tales

SPEAKING

1. Talk about a place you enjoyed going to or visiting when you were a child. Describe the place. Explain why you enjoyed it.

2. Do you agree or disagree with the following statement? Why or why not? Use details and examples to explain your answer. It is more important to study math or science than it is to study art or literature.

3. Campus Dining Club Announced

Starting this year, the university dining hall will be transformed into the Campus Dining Club for one week at the end of each semester. During the last week of each semester, the dining hall will feature special meals prepared by the university's culinary arts students. The school feels that this will give students who are studying cooking and food preparation valuable experience that will help them later, when they pursue careers. The university has announced that it will charge a small additional fee for these dinners in order to pay for the special gourmet food ingredients that will be required.

The man expresses his opinion about the university's plan. State his opinion and explain the reason he gives for holding that opinion.

4. Target Marketing

Advertisers in the past have used radio and television in an attempt to provide information about their products to large, general audiences; it was once thought that the best way to sell a product was to advertise it to as many people as possible. However, more recent trends in advertising have turned toward target marketing. Target marketing is the strategy of advertising to smaller, very specific audiences---audiences that have been determined to have the greatest need or desire for the product being marketed. Target marketing has proved to be very effective in reaching potential customers.

Using the professor's examples, explain the advertising technique of target marketing.

5. Briefly summarize the woman's problem. Then state which solution you would recommend. Explain the reasons for your recommendation.

6. Using points and examples from the talk, explain the two types of motivation.

WRITING

TASK 1

As early as the twelfth century A.D., the settlements of Chaco Canyon in New Mexico in the American Southwest were notable for their "great houses," massive stone buildings that contain hundreds of rooms and often stand three or four stories high. Archaeologists have been trying to determine how the buildings were used. While there is still no universally agreed upon explanation, there are three competing theories.

One theory holds that the Chaco structures were purely residential, with each housing hundreds of people. Supporters of this theory have interpreted Chaco great houses as earlier versions of the architecture seen in more recent Southwest societies. In particular, the Chaco houses appear strikingly similar to the large, well-known "apartment buildings" at Taos, New Mexico, in which many people have been living for centuries.

A second theory contends that the Chaco structures were used to store food supplies. One of the main crops of the Chaco people was grain maize, which could be stored for long periods of time without spoiling and could serve as a long-lasting supply of food. The supplies of maize had to be stored somewhere, and the size of the great houses would make them very suitable for the purpose.

A third theory proposes that houses were used as ceremonial centers. Close to one house, called Pueblo Alto, archaeologists identified an enormous mound formed by a pile of old material. Excavations of the mound revealed deposits containing a surprisingly large number of broken pots. This finding has been interpreted as evidence that people gathered at Pueblo Alto for special ceremonies. At the ceremonies, they ate festive meals and then discarded the pots in which the meals had been prepared or served. Such ceremonies have been documented for other Native American cultures.

Summarize the points made in the lecture, being sure to explain how they support/contradict specific points made in the reading passage.

TASK 2

People today spend too much time on personal enjoyment-doing things they like to do-rather than doing things they should do.