托福阅读核心预测

2018/08/17 发布

针对 2018/09/02 考试

【托福阅读出题规律&机经使用说明】

- **托福阅读最新考情分析**

根据小站教研中心的对每场考试的跟踪研究，自 2017 年 3 月 4 日以来，托福阅读呈现出了改革新趋势。3 月之后，托福阅读以**多卷形式**出现，每位考生遇到的题目都不完全一致，一场考试中所出现的阅读总篇目甚至多达 20 篇。为帮助考生应对托福阅读新趋势，小站教研中心推出阅读预测机经，帮助考生有针对性地复习。

- **托福阅读出题规律**

近两年来，阅读文章的题材类型、题目数量、题型比例与往年相比均无太大变化。最大的变化体现在**新题数量增加**。与 2015 年之前大量旧题拼盘的情况不同，2016 年之后托福阅读出现大量新题。三篇阅读重复整套旧题的情况几乎没有，多以**新题和新旧题拼盘**为主。从旧题重复规律来看，托福阅读以重复**近两年内的考题**为主。最热门题材依然是**生物类**和**历史类**。**地质、考古、社会、经济**等题材也是考查的重点，同学们平时可以针对这些题材，多做一些泛读。

- **机经使用说明**

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3. 作为背景知识补充材料

目录部分教研老师已经把阅读材料进行了学科和话题二级分类，同学们可以根据自身具体情况，挑选自己不熟悉的学科篇章进行重点练习，在练习的过程中注意积累学科词汇，必要的时候可以自行上网查找相关的学科背景知识，以帮助自己补齐短板。

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托福阅读机经答案目录

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题目

Passage 1

Animal Behavior

1 By the early 1900s the field of animal behavior had split into two major branches. One branch, ethology, developed primarily in Europe. To ethologists, what is striking about animal behaviors in that they are fixed and seemingly unchangeable? For example, kittens and puppies play in characteristic but different ways. Present a kitten with a ball of yarn and invariably it draws back its head and bats the yarn with claws extended. Kittens are generally silent as they play, and their tails twitch. Puppies, by contrast, are most likely to pounce flat-footed on a ball of yarn. They bit and bark and their tails wag. Ethologists came to believe that ultimately even the most complex animal behaviors could be broken down into a series of unchangeable stimulus/response reactions. They became convinced that the details of these patterns were as distinctive of a particular group of animals as were anatomical characteristics. For well over half a century, their search for and description of innate patterns of animal behavior continued.

2 Meanwhile, mainly in North America, the study of animal behavior took a different tack, developing into comparative behavior. Of interest to comparative behaviorists was where a particular came from, that is, its evolutionary history, how the nervous system controlled it, and the extent to which it could be modified. In 1894, C. Lloyd Morgan, an early comparative behaviorist, insisted that animal behavior be explained as simply as possible without reference to emotions or motivations since these could not be observed or measured. In Morgan's research, animals were put in simple situations, presented with an easily described stimulus, and their resultant behavior described.

3 The extension to animals of behaviorism—the idea that the study of behavior should be restricted to only those elements that can be directly observed—was an important development in comparative behavior. Studies of stimulus/response and the importance of simple rewards to enforce and modify animal behavior were stressed. Not surprisingly, comparative behaviorists worked most comfortably in the laboratory. Comparative behaviorists stressed the idea that animal behavior could be modified, while their ethologist colleagues thought it was innate and unchangeable. Inevitably, the two approaches led to major disagreements.

4 To early ethologists, the major driving force in behavior was instinct, behaviors that are inherited and unchangeable. ■ Moths move towards light because they inherit the mechanism to so respond to light. ■ Although dogs have more options available to them, they bark at strangers for much the same reasons. ■ The comparative behaviorists disagreed: learning and rewards are more important factors than instinct in animal behavior. ■ Geese are not born with the ability to retrieve lost eggs when they roll out the nest, they learn to do so. If their behavior seems sometimes silly to humans because it fails to take new conditions into account, that is because the animal's ability to learn is limited. There were too many examples of behaviors modified by experience for comparative behaviorists to put their faith in instincts.

5 The arguments came to a peak in the 1950s and became known as the nature or nurture controversy. Consider how differently an ethologist and a comparative behaviorist would interpret the begging behavior of a hatchling bird. The first time a hatchling bird is approached by its parent, it begs for food. All baby birds of a particular species beg in exactly the same way. Obviously, said the ethologists, they inherited the ability and the tendency to beg. Baby birds did not have to learn the behavior, they were born with it—a clear example of innate, unchanging behavior. Not so, countered the comparative behaviorists. Parent birds teach their young to beg by stuffing food in their open mouths. Later experiments showed that before hatching, birds make and respond to noises of their nest mates and adults. Is it not possible that young birds could learn to beg prenatally?

6 It was hard for ethologists to accept that innate behaviors could be modified by learning. It was equally difficult for comparative behaviorists to accept that genetic factors could dominate learning experiences. The controversy raged for over a decade. Eventually, however, the distinctions between the two fields narrowed. The current view is that both natural endowments and environmental factors work together to shape behavior.

1. The word “ultimately” in the passage is closest in the meaning to
A. noticeably
B. importantly
C. some of the time
D. in the end

2. According to paragraph 1, what do ethologists think is the most notable characteristic of animal behavior?
A. Animal responses in most situations are predictable and do not vary
B. In similar situations, different animal species often behave in similar ways.
C. Even in ordinary situations, animal behavior can be unusually complex.
D. Animal behavior may sometimes include stimulus/response reactions.

3. According to paragraph 2, C. Lloyd Morgan agreed with which of the following statements about animal behavior?
A. Only those elements of animal behavior that could be observed and measured should be used to explain it.
B. Any study of animal behavior should include an explanation of emotions and motivations.
C. Emotions and motivations can be measured indirectly using simple experimental situations.
D. Experimental situations are less than ideal if researchers want to develop a comprehensive explanation of animal behavior.

4. According to paragraph 2, comparative behaviorists were interested in finding answers to all of the following questions EXCEPT
A. How has animal behavior changed over time?
B. How can emotions causing a specific behavior in one animal species help explain behavior in other animal species?
C. To what degree can animal behavior be changed?

D. How does the nervous system regulate animal behavior?

5. Paragraph 3 suggests that comparative behaviorists' conclusions concerning animal behavior were based
A. on the observation that rewards do not affect inherited animal behavior
B. on the application of stress to modify animal behavior
C. most often on the results of laboratory experiments
D. more on stimulus/response reactions than on simple rewards

6. The word "retrieve" in the passage is closest in meaning to
A. find
B. recover
C. remember
D. hatch

7. According to paragraph 4, why did comparative behaviorists believe that their view of instinct in animal behavior was correct?
A. They had observed that animals can respond to the same stimulus in different ways.
B. They had demonstrated that animals could use learned behaviors in new conditions.
C. They had acquired sufficient evidence that instincts vary from one animal to another.
D. They had shown that the behavior of many different animals had been changed by learning.

8. The word "Obviously" in the passage is closest in meaning to
A. Originally
B. Clearly
C. Similarly
D. Consequently

9. The word "countered" in the passage is closest in meaning to
A. learned
B. argued back
C. assumed
D. predicted

10. In paragraph 5, why does the author discuss the begging behavior of a hatchling bird?
A. To support the view that instinct explains animal behavior better than learning does
B. To demonstrate that ethologists are correct about the limited ability of animals to learn
C. To contrast an ethologist's explanation of a particular animal behavior with that of a comparative behaviorist
D. To question whether the discussion about the roles of nature and nurture was a valid one

11. The word "current" in the passage is closest in meaning to
A. ideal
B. basic

C. alternative
D. present

12. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit?

This view is supported by the behavior of insects as well as animals.

Where would the sentence best fit?

13. Directions: Select from the seven phrases below the phrases that correctly characterize ethologists and the phrases that correctly characterize comparative behaviorists. Drag each phrase you select into the phrases will NOT be used. This question is worth 3 points.

Ethologists
●
●
Comparative Behaviorists
●
●
●

Answer Choices
A. Worked primarily in North America
B. Argued that animal behavior is passed on from one generation to another without change over time
C. Maintained from the start that behaviors that are inherited could be influenced by learning
D. Believed that stimulus-response reactions serve to distinguish one animal from another just as their physical features do
E. Studied stimulus-response reactions and emphasized the importance of rewards for enforcing and changing behavior
F. Conducted more experiments with birds than with any other species
G. Studied primarily how physical characteristics often determine behavior.

Passage 2

Wind pollination

1 Pollen, a powdery substance, which is produced by flowering plants and contains male reproductive cells, is usually carried from plant to plant by insects or birds, but some plants rely on the wind to carry their pollen. Wind pollination is often seen as being primitive and wasteful in costly pollen and yet it is surprisingly common, especially in higher latitudes. Wind is very good at moving pollen a long way; pollen can be blown for hundreds of kilometers, and only birds can get pollen anywhere near as far. The drawback is that wind is obviously unspecific as to where it takes the pollen. It is like trying to get a letter to a friend at the other end of the village by climbing onto the roof and throwing an armful of letters into the air and hoping that one will end up in the friend's garden. For the relatively few dominant tree species that make up temperate forests, where there are many individuals of the same species within pollen range, this is quite a safe gamble. If a number of people in the village were throwing letters off roofs, your friend would be bound to get one. By contrast, in the tropics, where each tree species has few, widely scattered individuals, the chance of wind blowing pollen to another individual is sufficiently slim that animals are a safer bet as transporters of pollen. Even tall trees in the tropics are usually not wind pollinated despite being in windy conditions. In a similar way, trees in temperate forests that are insect pollinated tend to grow as solitary, widely spread individuals.

2 Since wind-pollinated flowers have no need to attract insects or other animals, they have dispensed with bright petals, nectar, and scent. These are at best a waste and at worst an impediment to the transfer of pollen in the air. The result is insignificant-looking flowers and catkins (dense cylindrical clusters of small, petalless flowers).

3 Wind pollination does, of course, require a lot of pollen. ■ Birch and hazel trees can produce5.5 and 4 million grains per catkin, respectively. ■There are various adaptations to help as much of the pollen go as far as possible. ■Most deciduous wind-pollinated trees (which shed their leaves every fall) produce their pollen in the spring while the branches are bare of leaves to reduce the surrounding surfaces that "compete" with the stigmas (the part of the flower that receives the pollen) for pollen. ■ Evergreen conifers, which do not shed their leaves, have less to gain from spring flowering, and, indeed, some flower in the autumn or winter.

4 Pollen produced higher in the top branches is likely to go farther, it is windier (and gustier) and the pollen can be blown farther before hitting the ground. Moreover, dangling catkins like hazel hold the pollen in until the wind is strong enough to ben them, ensuring that pollen is only shed into the air when the wind is blowing hard. Weather is also important. Pollen is shed primarily when the air is dry to prevent too much sticking to wet surfaces or being knocked out of the air by rain. Despite these adaptations, much of the pollen fails to leave the top branches, and only between 0.5 percent and 40 percent gets more than 100 meters away from the parent. But once this far, significant quantities can go a kilometer or more. Indeed, pollen can travel many thousands of kilometers at high altitudes. Since all this pollen is floating around in the air, it is no wonder that wind-pollinated trees are a major source of allergies.

5 Once the pollen has been snatched by the wind, but not everything is left to chance. Windborne pollen is dry, rounded, smooth, and generally smaller than that of insect-pollinated plants. But size is a two-edged sword. Small grains may be blown farther but they are also more prone to be whisked past the waiting stigma because smaller particles tend to stay trapped in the fast-moving air that flows around the stigma. But stigmas create turbulence, which slows the air speed around them and may help pollen stick to them.

1. The word "drawback" in the passage is closet in meaning to
A. other side of the issue
B. objection
C. concern
D. problem

2. Which of the following can be inferred from paragraph 1 about pollen production?
A. Pollen production requires a significant investment of energy and resources on the part of the plant.
B. The capacity to produce pollen in large quantities is a recent development in the evolutionary history of plants.
C. Plants in the tropics generally produce more pollen than those in temperate zones.
D. The highest levels of pollen production are found in plants that depend on insects or birds to carry their pollen.

3. According to paragraph 1, wind-pollinated trees are most likely to be found
A. in temperate forests
B. at lower latitudes
C. in the tropics
D. surrounded by trees of many different species

4. Paragraph 1 supports which of the following as the reason animals are a safer bet than wind as pollinators when the individual trees of a species are widely separated?
A. Animals tend to carry pollen from a given flower further than the wind does.
B. Animals serve as pollinators even where there is little wind to disperse the pollen.
C. An animal that visits a flower is likely to deliberately visit other flowers of the same species and pollinate them.
D. Birds and insects fly in all directions, not just the direction the wind is blowing at a given moment.

5. In paragraph 1, the author compares pollen moved by wind with letters thrown off roofs in order to
A. explain why there are relatively few species of trees that depend on wind pollination
B. compare natural, biological processes with human social practices
C. make a point about the probability of wind-blown pollen reaching a tree of the same species
D. argue against the common assumption that the tallest trees are the most likely to employ wind pollination

6. Paragraph 2 suggests that wind-pollinated plants do not have bright petals, nectar, and scent for which TWO of the following reasons? To receive credit, you must select TWO answers.

A. They interfere with pollination by wind.
B. They are easily damaged by wind.
C. They are unnecessary.
D. They reduce the amount of pollen that can be produced.

7. The word “respectively” in the passage is closet in meaning to
A. over time
B. separately
C. in that order
D. consistently

8. According to paragraph 3, why do most deciduous wind-pollinated trees produce their pollen in the spring?
A. To avoid competing with evergreen conifers, which flower in the fall or winter
B. So that the leaves of the trees receiving the pollen will not prevent the pollen from reaching the trees’ stigmas
C. Because they do not have enough energy to produce new leaves and pollen at the same time
D. In order to take advantage of the windiest time of year

9. According to paragraph 4, which of the following is NOT an adaptation that helps ensure that pollen travels as far as possible?
A. Pollen-producing flowers and catkins are located at or near the top of the tree.
B. Trees grow at least 100 meters away from each other.
C. Dangling catkins release pollen only when the wind is blowing hard.
D. Pollen is not released during rain storms or when the air is damp.

10. The word “significant” in the passage is closet in meaning to
A. sufficient
B. considerable
C. increasing
D. small

11. The phrase “no wonder” in the passage is closet in meaning to
A. unsurprising
B. understandable
C. well-known
D. unfortunate

12. 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. Because smaller particles tend to stay trapped in the fast-moving air, they are blown much farther than other grains.
B. Smaller particles are trapped by the stigma when fast-moving air flows past it.
C. Small particles that are whisked past the waiting stigma gain speed and are often trapped in the fast-

moving air.

D. While smallness helps pollen travel farther, it also makes it more likely to be blown past the stigma.

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

This level of volume is important to ensure that at least some of the pollen reaches a target tree, but dispersing the pollen is crucial as well.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage.
This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.

Answer choices

A. Because there are few trees in temperate forests, it is safer to transport pollen by insects or birds.
B. Wind pollination is a safe reproductive strategy for trees in temperate forests where there are only a few dominant species and, therefore, many individuals of the same species.
C. Wind pollination requires production of large amount of pollen, which must be released at the right time and under the right conditions to extend its range.
D. Most wind-pollinated trees are deciduous because evergreen needles compete with the stigma for pollen, making wind pollination uncertain.
E. Wind-pollinated plants usually have small petalless flowers which often grow in catkins that produce a very fine-grained pollen.
F. Wind-pollinated trees must grow in regions that are only moderately windy because strong winds will blow the tiny pollen grains past the stigma.

Passage 3

Cereals and Legumes: A Partnership

1 Cereals are flowering grasses that sprout, flower, seed, and die in the space of a year, which is why gardeners refer to them as annuals. Grown for their seeds or kernels, cereals are excellent sources of energy: although they lack some amino acids, as well as calcium, vitamin A, and vitamin C, they provide starch and oil, and in some cases, considerable amounts of protein. Once ripe, the kernels are relatively easy to store, and they retain their nutrients for a long time. Even the stalks of cereals are useful as animal food, as bedding in stables and barns, and as a building material. A major drawback with cereals is that they depend on the soil for nitrogen. Without fertilization they eventually exhaust the fields they are growing in, but despite this, two cereals (wheat and barley) were the very first plants to be domesticated (grown for human use); and a third (rye) may have been cultivated, or even domesticated, at about the same time. Today, cereal crops including wheat, rice, maize, sorghum, millet, and oats provide most of the calories in the human diet.

2 Like cereals, legumes are annuals. ■ Some legumes are grown for animal fodder. Many other legumes, however, are cultivated for their seeds, which ripen in pods. The seeds are rich in B vitamins and iron, contain on average two times the protein but less starch than cereals, and can be eaten, sometimes pods and all, while they're still green. (Snow peas and green beans are familiar examples.) ■ Legumes are characterized by a long period of sequential ripening, during which a single plant may have ripe pods, green pods, and flowers, all at the same time, which means that a stand of legumes can be harvested again and again over several weeks. Like cereals, legumes can be dried and stored for later use (the pods open easily when dry), and again like cereals, legumes provide food for both people and animals. ■ However, legume plants add nitrogen to the soil, so when they are grown in the same fields as cereals, they can replace much of the nitrogen the cereals have depleted. ■

3 Growing cereals and legumes together is good for the fields, and eating them together is good for the farmers. In order to build and maintain body tissue, people need protein or more specifically, the amino acids in protein. Some amino acids are synthesized in the adult human body, but eight essential ones cannot be and have to come from food. Although all eight are present in animal protein, plant proteins are usually missing one or two. When cereals and legumes are eaten together, they provide all eight of the essential amino acids, a fact that the ancestors of early agriculturalists undoubtedly understood at least on a practical level and their descendants took advantage of that knowledge. In Asia, rice, wheat, and barley were grown along with soybeans; in India rice was paired with hyacinth bean, black gram, and green gram; in the African savanna, pear millet and sorghum were domesticated along with cow pea and Bambara groundnut; and in the New World, maize and Phaseolus beans in Central America and maize and groundnuts in South America were the bases for agriculture.

4 Cereals and legumes are technically dry fruits (they have a hard dry layer around their seeds). Early agriculturalists also experimented with growing succulent fruits like apples, olives, grapes, and melons, but most of these were brought into domestication much later than cereals and legumes, and in most

cultures they've always been supplementary foods rather than staples. Many of them are propagated vegetatively asexually by using a plant part such as a bulb or cutting rather than sexually through seeds, so they are more complicated to grow than cereals and legumes, and this may account for their typically late addition to agricultural assemblages. It should be noted, however, that recent research in Israel suggests that figs may have been domesticated at a site near Jericho in the Jordan Valley at about the same time as the first experiments with cereals and legumes, and some archaeologists believe that in New Guinea, tubers may have been domesticated long before other crops were imported.

1. According to paragraph 1, all of the following are advantages of cereals EXCEPT:
A. They provide large amounts of energy when consumed.
B. They store easily and retain nutrients for a long time.
C. They provide considerable amounts of calcium, vitamin A, and vitamin C.
D. They have multiple uses, including as bedding or building material.

2. According to paragraph 1, a major disadvantage of cereals is that they
A. cannot be used as animal food
B. must be planted in a different field every year
C. take a long time to ripen before they can be used or stored
D. use up all of the nitrogen in a field unless fertilizer is used

3. According to paragraph 2, one way in which legumes differ from cereals is that legumes
A. are a better source of starch
B. contain far more protein
C. take much longer to ripen
D. must be dried before being stored

4. According to paragraph 2, all of the following statements about legumes are true EXCEPT:
A. Legumes have pods that help seeds ripen quickly.
B. Legumes contain a lot of iron and B vitamins.
C. Legumes return nitrogen to the soil.
D. Legume plants can be harvested many times during a growing season.

5. The word “specifically” in the passage is closest in meaning to
A. precisely
B. importantly
C. frequently
D. likely

6. The word “undoubtedly” in the passage is closest in meaning to
A. possibly
B. typically
C. certainly
D. initially

7. Paragraph 3 supports which of the following ideas about amino acids
A. Amino acids are not produced by the human body and must be obtained from food.
B. Certain amino acids that people need for building and maintaining body tissue cannot be acquired from plant proteins.
C. When legumes or cereals are consumed alone, they do not provide all of the essential amino acids.
D. Legumes are missing many more of the eight essential amino acids than cereals are.

8. In paragraph 3, why does the author discuss crops grown in Asia, India, the African savanna, and the New World
A. To show how widely the understanding of the benefits of combining legumes and cereals was applied
B. To suggest that it was most effective for the same crops to be grown year after year in many parts of the world
C. To emphasize that proteins that come from plants were recognized as valuable in many parts of the world
D. To demonstrate that a wide variety of very different cereals and legumes could be grown together

9. The word “technically” in the passage is closest in meaning to
A. more complex than
B. generally understood to be
C. often confused with
D. scientifically classified as

10. The word “supplementary” in the passage is closest in meaning to
A. valued
B. rare
C. seasonal
D. extra

11. 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. Many of the cereals and legumes can be propagated asexually through offshoots, cuttings, tubers, bulbs and corns or sexually through seeds, which are less complicated to grow.
B. Fruits were typically domesticated later than cereals and legumes, possibly because they tend not to be propagated through seeds and are thus more complicated to grow.
C. Plants that are propagated sexually through seeds are generally much less complicated to grow than asexually propagated plants are.
D. In addition to being propagated asexually, rather than sexually through seeds, many fruits can be added and grown later in the season than cereals and legumes.

12. Paragraph 4 supports which of the following ideas about the figs that may have been domesticated in the Jordan Valley near Jericho
A. Their early domestication casts doubt on the idea that succulent fruits were grown much later than cereals and legumes.

B. They were a more important crop to inhabitants of the Jordan Valley than cereals and legumes were.
C. They are closely related to the plants domesticated in New Guinea before other crops were imported.
D. They are much easier to grow than any other succulent fruit.

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

Although they must be replanted each year, they can be grown for a variety of uses.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text. Answer Choices

A. Cereals, annual flowering grasses with usable stalks and nutritious seeds that dry and store well, were the first domesticated plants, but they must be grown with legumes to preserve soil nitrogen.
B. Legumes contain a large amount of protein and, when they are eaten with cereals, provide all the amino acids essential to humans.
C. Both the seeds and stalks of wheat and barley were eaten by early agriculturalists, who needed to take in enough nutrients and calories to work the fields.
D. Planting cereals and legumes together sped up their growing period, which meant that they could both be harvested many times over a period of several weeks to several months.
E. Cereals and legumes were typically domesticated well before succulent fruits, which are harder to cultivate, and became staples in early agricultural societies.
F. Because soil conditions in New Guinea and the Jordan Valley made it difficult to grow cereals such as wheat and barley, these regions began to cultivate figs and tubers instead.

Passage 4

Models of Egg Development

1 Several different theories have been put forward to explain how the hard-shelled eggs of land-dwelling reptiles (e.g. lizards) evolved from the soft eggs that amphibians (e.g. frogs and toads) lay in water. The Romer model of egg development is named after the late Alfred Romer, a paleontologist who also became director of the Harvard University Museum of Comparative Zoology. His specialty was early reptiles because, he felt, they were the key to understanding the great reptile diversification seen in the Late Paleozoic and Mesozoic Eras (around 230 million years ago). Romer's hypothesis was that some aquatic amphibians that is, amphibians living in water called anthracosaurs began to lay their eggs on land at about the time that they were evolving reptile-like skeletal features. Indeed, some of these early amphibians and earliest reptiles are so similar in their skeletons that the exact transition point from one to the other is still difficult to determine. Eventually, though, the transition was made, but these early reptiles remained aquatic. The advantage for laying eggs on land was primarily to avoid the aquatic larval (pre-adult) stage during which immature amphibians live exclusively in water with its inherent risk of predators and drying of ponds. However, the land has its own set of dangers, not least of which is the drying effect of the atmosphere. To cope with these problems, a series of protective membranes developed around the egg, including a hard shell. Only later did the reptiles completely abandon an aquatic lifestyle.

2 Another hypothesis was proposed by German paleontologist Rolf Kohring, whose specialty is fossil eggs. In Kohring's model, amphibians during the Mississippian epoch (360-320 million years ago) spread into nutrient-poor or cooler water. Because of the harsher conditions, eggs were produced with larger yolks, that is, more nutrients for the embryo. With larger yolks, the eggs were bigger, and fewer of them could be produced by the female hundreds rather than thousands. ■ To keep the larger egg intact, one or more membranes were developed, including one that surrounded and protected the egg. ■ This outer membrane provided a place to safely store calcium ions, which are poisonous. ■ Accumulating the calcium in a hard shell then made it possible for the egg to be laid on land (it was pre-adapted to be laid there.) ■

3 One other model we should consider is the anti-predator hypothesis proposed by Gary and Mary Packard to explain the evolution of the hard-shelled egg. Their model was not concerned with the development of membranes surrounding the egg but continues the story after these membranes appeared. The Packards assume that the earliest reptiles laid leathery shelled eggs on very wet ground where they could absorb water during the embryos' growth. But life on the ground is not without hazards, based on studies of modern reptiles with leathery shelled eggs. Predatory insects and microbes can be a major cause of egg mortality. To counter this loss of eggs, some of the early reptiles began secreting a thin calcareous (containing calcium carbonate) layer. This hard layer gave the embryos a better chance of surviving until hatching. And these survivors in turn would probably leave more progeny once a few of them reached reproductive age. In time, a thicker, more resistant shell developed. However, a thicker eggshell meant that less water could be absorbed for the needs of the embryo. To compensate, larger eggs were produced, containing a great deal more albumen (egg white, a water-soluble protein). At this point, the rigid eggshell had reached the bird egg level of complexity.

4 Mary Packard presented yet another model with her colleague Roger Seymour. They note that amphibian eggs can never get very large because the gelatin coat surrounding the developing larva is not very good at transmitting oxygen. Because of this restriction, we will never see frog eggs the size of a chicken's. For Packard and Seymour, the major evolutionary breakthrough in reptile eggs was the elimination of the thick gelatin coat and replacing part of it with a fibrous membrane. This change allowed larger eggs to be developed.

1. 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. During the period that early amphibians changed into reptiles, their skeletons were exactly the same.
B. It is difficult to identify the time that early amphibians changed to reptiles because their skeletons look so much alike.
C. The skeletons of some early amphibians and reptiles are so similar that it is difficult to say which are amphibians and which are reptiles.
D. Early amphibians and reptiles had the same kind of skeleton at the same point in time.

2. The word “exclusively” in the passage is closest in meaning to
A. only
B. initially
C. primarily
D. temporarily

3. According to paragraph 1, aquatic amphibians laid their eggs on land in order to
A. enable young amphibians to benefit from a dry atmosphere
B. ensure the rapid development of a hard shell
C. enable young amphibians to evolve features necessary for living on land
D. protect young amphibians from the dangers associated with life in the water

4. The word “Accumulating” in the passage is closest in meaning to
A. Forcing
B. Collecting
C. Distributing
D. Isolating

5. In paragraph 2, why does the author mention the information about calcium ions
A. To explain Koherig's theory that amphibian eggs developed at least two protective outer membranes
B. To explain that the calcium in a hard shell is not poisonous when the egg is laid on land
C. To explain why, according to Kohring, a hard shell evolved
D. To explain why only the outer membrane stored calcium

6. Which of the following can be inferred from paragraph 2 about the relationship between eggs and water

temperature
A. Eggs needed adaptations to survive in cold water.
B. Eggs needed warm water to survive.
C. Smaller eggs were produced in cold water.
D. Fewer eggs were produced in warm water.

7. According to paragraph 2, all of the following are true of the eggs of amphibians during the Mississippian epoch EXCEPT:
A. They had hard shells made from calcium ions.
B. They had larger yolks than previously.
C. They had protective membranes.
D. They were produced in larger quantities than previously.

8. The word “counter” in the passage is closest in meaning to
A. escape
B. stop
C. combat
D. delay

9. According to paragraph 3, early reptiles began to develop a thin calcareous layer around the egg so that
A. the embryo could survive attacks from predatory insects and microbes
B. the embryo could absorb sufficient water during its growth
C. the surviving embryo could reach reproductive age
D. the egg could be laid on land

10. Which of the following is mentioned in paragraph 3 as a disadvantage of the hard eggshell
A. It increased the hatching period.
B. It prevented the development of large-size eggs.
C. It made it more difficult for the embryo to obtain water.
D. It made it harder for the embryo to survive until hatching.

11. The word “breakthrough” in the passage is closest in meaning to
A. effect
B. development
C. requirement
D. goal

12. Which of the following can be inferred from paragraph 4 about the fibrous membrane
A. It served the same function as the gelatin coat.
B. It was larger than the gelatin coat.
C. It allowed amphibians to produce eggs as large as those of reptiles.
D. It allowed for better transmission of oxygen.

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

And the relatively few that were produced had to be properly protected.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Alfred Romer's hypothesis was that early amphibians started evolving reptilian skeletal features long before they started laying eggs on land.
B. Alfred Romer theorized that early reptiles developed protective membranes around the egg in response to the dangers to young amphibians in water and threats to the egg on land.
C. In Rolf Kohring's view, early reptiles developed protective membranes around the large eggs that were produced in harsh water conditions, making it possible for the egg to be laid on land.
D. Gary and Mary Packard claimed that reptiles developed the hard-shelled egg in order to reduce the rate at which eggs were destroyed by predatory insects and microbes.
E. Rolf Kohring argued that egg development was poor during the Mississippian epoch due to nutrient-poor waters.
F. According to Mary Packard and Roger Seymour, reptiles could not successively develop very large eggs because of the elimination of the gelatin coat.

Passage 5

Honeybee Society

1 Honeybee colonies are essentially societies of females. In a hive of perhaps 20,000 bees, only a few hundred will be male bees, called drones. ■ They are around only in the spring or summer long enough to rise to treetop level in a comet-like swarm, chasing after one of the queen bees that have assembled from various hives at a mating site. ■ Of the many drones assembled, only 10 to 15 will actually mate with a queen during one of her mating flights. ■ Each drone that is successful dies in the process, however, and a similar fate awaits drones that aren't successful; once mating is done, they will be expelled from their hives or killed. ■

2 The week of mating flights prepares the queen for a lifetime of prodigious egg laying; she will produce up to 2,000 fertile eggs a day for years. Nearly all of the offspring that hatch from these eggs are female; they are the hive's worker bees; and they are well named, for it is they who will maintain the hive, forage for food, store the food away, care for newly laid eggs, and more. It is they who will do everything for the colony, in other words, except lay eggs and mate with the queen.

3 Over their brief adult lives of perhaps six weeks, every worker bee takes on, in a predictable order, nearly all the worker tasks that the hive has to offer. For the first three days of her life, a worker is primarily a cleaner of the cells that the bee larvae (immature, wormlike bees) are stored in. As the days pass, she becomes primarily a larvae feeder, then a hive construction worker, then an entrance guard and food storer, and finally a forager, going out to secure nectar, pollen, and water for the colony. Within this structure, however, a worker's life is one of surprising flexibility. After becoming a construction worker, for example, she still engages in some cell cleaning; and throughout her life, she spends a good deal of time resting and patrolling the hive.

4 Importantly, there is no chain of command in a colony no group of workers communicating the message more food needed now or cell cleaning needed over here. How, then, does all this work get organized among tens of thousands of bees. Bees are prompted to act either because of environmental conditions (the temperature of the hive, for example) or because of signals or cues they receive from other bees. The signals are explicit acts of communication, as with the famous waggle dance that bees perform to inform their fellow workers of the location of food sites.

5 Quite often, however, bees are reacting to cues they get from other bees that simply imply a given condition. Take, as an example, a cue that researcher Thomas Seeley confirmed that has to do with unloading time at the hive. In a well-fed hive, forager bees gather food only from flower patches that have lots of nectar. When a hive is near starvation, however, the foragers aren't so choosy; then low-yield flower patches will do. So, how does a forager know whether to be choosy or not. How is she informed of the nutritional status of the colony, in other word, her informational source is the length of time it takes her to unload her food. Providing the cues are the food-storer bees, which receive the food the foragers bring back and then process it into honey and pack it away in the hive. It takes a returning forager a relatively

long time to make contact with a food-storer bee in a well-fed hive, but a relatively short time in a starving hive. Why? Because in a well-fed hive, the food storers have plenty to keep them busy there is plenty of food to store away. If, however, a forager can make contact with a food storer within 15 seconds of entering the hive, the forager knows the colony is low on food and will start paying visits to low-yield sites. This is but one example of how life in the colony is self-organizing; each bee's behavior is shaped by the behavior of other bees.

1. The phrase “expelled” from in the passage is closest in meaning to
A. forced from
B. carried from
C. left by
D. guided from

2. It can be inferred from paragraph 1 that drones are around only in spring or summer because
A. they are born in these seasons
B. mating flights occur in these seasons
C. they are expelled from the hive in these seasons
D. they are unable to survive in colder seasons

3. According to paragraph 1, all of the following are true about honeybee drones EXCEPT:
A. They are a small percentage of the bees in a hive.
B. They die in the process if they mate with a queen bee.
C. They are accepted back in the hive if they fail to mate.
D. They swarm at mating sites to chase after a queen bee.

4. Which of the following can be inferred from the discussion of bee society in paragraphs 1 and 2
A. Male bees have no function other than to mate with the queen.
B. Male bees have higher status than female bees in the hive.
C. Female bees produce numerous offspring.
D. Female bees play a relatively unimportant role in the hive.

5. According to paragraph 3, the main task for the most mature worker bees is
A. storing nectar and pollen
B. cleaning bee larvae cells
C. guarding the entrance to the hive
D. obtaining food and water for the hive

6. The word “prompted” in the passage is closest in meaning to
A. able
B. required
C. programmed
D. stimulated

7. The word “explicit” in the passage is closest in meaning to
A. unusually creative
B. clearly expressed
C. ordinary
D. necessary

8. Why does the author mention the famous waggle dance that bees perform in the passage
A. To give an example of a signal shared between worker bees
B. To indicate how worker bees are able to find good food sites
C. To show how environmental conditions affect bee behavior
D. To illustrate how the presence of food stimulates bee activity

9. The word “imply” in the passage is closest in meaning to
A. introduce
B. suggest
C. state
D. reveal

10. According to paragraph 5, which of the following describes forager bee activity when a hive has not been receiving sufficient food
A. The foragers spend time looking for high-yield flower patches.
B. The foragers return to the hive only infrequently.
C. The foragers bring nectar from low-yield as well as high-yield flower patches.
D. The foragers travel long distances looking for nectar.

11. According to paragraph 5, how does a returning forager bee know that the hive is well fed
A. The food-storer bees signal the foragers to remain in the hive.
B. The food-storer bees are producing honey, not storing food.
C. The food-storer bees ignore forager bees that are bringing low-quality food.
D. The food-storer bees are busy and not readily available to unload food.

12. In which of the following ways does paragraph 5 relate to paragraph 4
A. Paragraph 5 continues the discussion of the location of food sites begun in paragraph 4.
B. Paragraph 5 elaborates on the topic introduced in paragraph 4 about types of communication between bees.
C. Paragraph 5 discusses the research that made the waggle dance in paragraph 4 famous.
D. Paragraph 5 explains in further detail the foraging activities of worker bees mentioned in paragraph 4.

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

Lacking the body parts to collect nectar and pollen, they have no function in the community once the opportunity to mate has passed.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Although a hive may contain as many as 20,000 bees, only a few of its females become queens and mate with drones.
B. Once a queen has completed mating, she lays thousands of eggs each day, thereby supplying the colony with offspring for many years.
C. Worker bees accomplish all the work necessary to maintain the hive by following an orderly pattern of taking on new tasks as they mature.
D. Mature workers are typically required to play a variety of roles daily to ensure that the needs of the hive are being met.
E. Rather than following orders from leaders, workers determine what needs to be done from environmental cues or from signals from other workers.
F. Bees communicate most efficiently when they provide explicit signals to their fellow workers.

Passage 6

Birdsong

1 Birdsong is the classic example of how genes (hereditary information) and environment both have a crucial role to play in the behavioral development of animals. Since the pioneering work of W. H. Thorpe on chaffinches (a common European bird), many species have been studied, and it has become clear both that learning plays an important role for all species and also that there are constraints on what they are able to learn.

2 Thorpe was able to show that learning from others was involved in chaffinch birds through a series of experiments on hand-reared chicks (young birds). As in most other species, only the males sing. Thorpe found that, if he raised young males in total isolation from all others, the song they produced was quite different from that of a normal adult. It was about the right length and in the correct frequency range. It was also split up into a series of notes as it should be. But these notes lacked the detailed structure found in wild birds, nor was the song split up into distinct phrases as it usually is. This suggested that song development requires some social influence. Later experiments in which researchers played recordings of songs to young birds showed just how precise this influence was: many of them would learn the exact pattern of the recording they had heard. A remarkable feature here was that birds were able to copy precisely songs that they only heard in the first few weeks of life, yet they did not sing themselves until about eight months old. They are thus able to store a memory of the sound within their brain and then match their own output to their recollection of it when they mature.

3 Young chaffinches normally learn only chaffinch song, though Thorpe found they could be trained to sing the song of a tree pipit (another type of bird), which is very similar to that of their own species. ■In general, however, the constraints on learning which birds have ensure that they only learn songs appropriate to the species to which they themselves belong. ■These constraints may be in their brain's circuitry, the young bird hatching with a rough idea of the sounds that it should copy. ■The crude song of a bird reared in isolation gives some clues as to what this rough idea may be: the length, the frequency range and the breaking up into notes are all aspects of chaffinch song shared between normal birds and those reared in isolation. ■In other cases the constraints are more social, young birds only being prepared to learn from individuals with whom they have social interactions. Thus, in a number of species, it has been found that they will not copy from recordings, but will do so from a live tutor. In some cases this may occur when they are young birds, but in others the main learning period is when they set up their territories and interact with neighbors for the first time, enabling them to match their neighbor's songs and so counter-sing with them. Whatever the nature of the learning rules in a particular species, there is no doubt that they are effective; it is very unusual to hear a wild bird singing a song which is not typical of its own species despite the many different songs which often occur in a small patch of woodland.

4 However, not all birds show the same learning pattern as do chaffinches. There are some species which produce normal sounds even if deaf, so that they cannot hear their own efforts, much less copy those of others. The cooing of doves and the crowing of cocks are examples here. In other cases, such as parrots

and hill mynahs, birds can be trained to copy a huge variety of sounds, though those they learn in the wild are usually more restricted. The amazing capability of mynahs has apparently arisen simply because birds in an area learn a small number of their calls from each other, males from males and females from females, and these calls are highly varied in structure. The ability to master them has led the birds, incidentally, to be capable of saying "hello" and mimicking a wide variety of other sounds.

1. The word "pioneering" in the passage is closet in meaning to
A. recent
B. famous
C. original
D. controversial

2. The word "distinct" in the passage is closet in meaning to
A. short
B. simple
C. separate
D. similar

3. According to paragraph 2, all of the following are characteristics of the songs of the young chaffinches in Thorpe's experiment EXCEPT:
A. They were not identical to the songs of normal adult chaffinches.
B. They lacked the complex form of the songs of wild chaffinches.
C. They were as long as the songs of normal adult chaffinches.
D. They were clearly different from each other.

4. According to paragraph 2, researchers discovered which of the following by playing recordings of songs to chaffinches?
A. Chaffinches could no longer be taught to reproduce sounds after the first few weeks of life.
B. Chaffinches could not reproduce songs with exactly the same patterns of recorded songs.
C. Chaffinches at the age of eight months could recall and reproduce a song that they heard in the first few weeks of life.
D. Chaffinches that learned a song from recordings in the first few weeks of life were later unable to copy the sounds of mature chaffinches.

5. All of the following are mentioned in paragraph 2 as characteristics of wild chaffinches EXCEPT:
A. They are able to copy songs very precisely.
B. Their song development requires interaction with other chaffinches.
C. Their songs are not as well-structured as the songs of other birds.
D. It is the males of the species that do the singing.

6. The word "enabling" in the passage is closet in meaning to
A. allowing
B. challenging

C. forcing
D. preparing

7. It can be inferred from paragraph 3 that one of the functions of songs in birds is to
A. bring together birds living in groups with birds living in isolation
B. help young birds distinguish other young birds from adults
C. make possible interactions between birds of different species
D. help birds to establish territories

8. 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. Songs produced by chaffinches reared in isolation are cruder than the songs of wild birds.
B. The song of a bird reared in isolation suggests which aspects of chaffinch song may be inborn.
C. Comparing the crude songs of chaffinches reared in isolation to the songs of wild chaffinches suggests differences as well as similarities.
D. Studying the song aspects of chaffinches reared in isolation, researchers have gained a better understanding of the songs produced by wild birds.

9. According to paragraph 3, in some species, young birds do not copy songs from recordings because
A. they learn to sing only by live interactions with other birds
B. their ability to learn from recordings occurs later in life
C. they can only learn the songs of the birds living in their area of woodland
D. they can only learn songs from other birds of their own species

10. Why does the author mention that it is very unusual to hear a wild bird singing a song which is not typical of its own species?
A. To explain why a variety of different bird songs are often heard in a relatively small area
B. To argue that social constraints have a greater impact upon learning than do genetic constraints
C. To provide an example of how the process of learning rules varies from one species to another
D. To illustrate how effective the different constraints upon learning are in young birds

11. The word “restricted” in the passage is closet in meaning to
A. important
B. popular
C. limited
D. accurate

12. According to paragraph 4, why are mynahs able to learn to make a wide variety of sounds?
A. They have the ability to imitate any sound that they are exposed to.
B. The frequency with which mynahs travel from one small area to another exposes them to a wide variety of sounds.
C. They are exposed in the wild to calls that are very different from each other.
D. An acute sense of hearing allows them to listen to and copy many different sounds.

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

Are these constraints genetic, environmental, or both?

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

Passage 7

How Birds Acquire Their Songs

1 Most songbirds hatch in the spring and then merely listen to the songs of adult male birds until sometime in late summer or autumn, when the adults stop singing, not to resume until the end of winter the following year. It is usually male birds that are doing the singing in northern latitudes, though female singing is common in the tropics. Many young songbirds do no singing of their own until nearly a year after their birth. With the coming of their second spring, their testosterone levels rise and this in turn prompts them to begin singing, with their song development following a predictable pattern over a period of weeks. At first, their songs may be a quiet, jumbled series of chirps and whistles. Over time, young birds begin to use the syllables of their species' songs, though the order in which these syllables appear will vary. Finally, their songs crystallize (take form) into the clear, orderly song of their species.

2 There is a songbird, called the white-crowned sparrow, whose song development follows this general script while providing some variations that are instructive about the interplay of internal influences and learning in birdsong. White-crowned sparrows raised in captivity will follow the pattern of song acquisition just described: they listen to songs in their first spring and summer but do not themselves begin singing until they are perhaps six months old. In nature, however, things are different. For example, the white-crown found year-round in the San Francisco area sings a particular regional variant or dialect of the basic white-crown song and begins singing within six weeks or so of birth and may progress to fully crystallized song as early as three months after birth, meaning about September.

3 Why would there be a difference between singing in nature and singing in the laboratory? The pressures of nature. ■ As year-round residents, the San Francisco white-crowns do not fly into an area in spring and then establish territories. ■ Rather, they establish territories as early as their first autumn. ■ One function of birdsong is to announce, I have a territory here. ■ Young white-crowns, like many species, will extend this practice by countersinging, meaning a male, upon hearing the song of a nearby male of its species, will repeat the exact song he has heard, thus setting off a back-and-forth duel, like two children in an argument, each of them saying, I'm still here.

4 Internal influences and learning are also on display in white-crowns in the way they acquire their songs. We know that there is often a so-called sensitive period for animal learning a kind of window in which an animal is able to acquire certain skills or information. In laboratory-raised white-crowns, the sensitive period starts at about ten days after birth and extends until about fifty days after birth. A white-crown that became deaf prior to the opening of the sensitive period eventually will sing individual notes, but it will never learn to sing its species' song. Meanwhile, white-crowns that are raised in nature through part of their sensitive period and then taken to the laboratory will begin singing the following winter in the dialect of the area in which they were hatched. Two points are worth observing about this. First, note that these birds are learning the white-crown song months before they ever start practicing it themselves. Indeed, the learning window will be closed completely (in their first summer) before these lab-reared birds ever sing a note (the following winter). Second, learning is important enough in song acquisition that white-

crowns learn not just their species' song but local or regional variants of it, which they are able to recall months after last hearing them.

5 But what about internal influences? Interestingly, all white-crowns that are reared in isolation from birth eventually sing nearly identical versions of a kind of standard white-crown song. In other words, there seems to be a built-in version of the white-crown song that becomes modified with local dialects only when birds are raised in the wild. Beyond this, isolated white-crowns that are exposed to tapes of other species' songs will ignore the other birds' songs entirely and go on to sing the basic white-crown song. White-crowns are thus genetically disposed to learn their own song while ignoring the songs of others.

1. The word “prompts” in the passage is closest in meaning to
A. stimulates
B. strengthens
C. prepares
D. forces

2. According to paragraph 1, which of the following is true of male songbirds in the first year of life
A. They do not begin singing until sometime in late summer or autumn.
B. They begin singing earlier in the tropics than in northern latitudes.
C. They listen to songs of adults for an extended period of time before they themselves sing.
D. Their earliest songs contain the characteristic order of syllables for their species.

3. The word “particular” in the passage is closest in meaning to
A. popular
B. specific
C. well-known
D. complex

4. According to paragraphs 2 and 3, all of the following are true about San Francisco white-crowns EXCEPT:
A. They do not migrate to another area in spring to establish territories.
B. They completely acquire their song as early as three months after birth.
C. They establish territories in their first autumn.
D. They begin singing much earlier in captivity than they do in nature.

5. In paragraph 3, the author points out that San Francisco white-crowns establish their territories in the area in which they are born in order to explain which of the following
A. Why they practice counter-singing
B. Why they get better territories than white-crowns that establish territories in areas in which they are not born
C. Why they are more competitive than white-crowns raised in captivity
D. Why in their natural habitat they start singing earlier than white-crowns raised in captivity

6. 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. Many species, including white-crowns, use a dueling technique to spread the practice of countersinging to other males of the species.
B. A young white-crown male uses countersinging to learn the songs of nearby males by repeatedly practicing them.
C. A young white-crown male engages in countersinging with a nearby male in order to assert its continuing presence in its territory.
D. Young white-crown males, much like young children, are competitive.

7. The word “eventually” in the passage is closest in meaning to
A. generally
B. probably
C. in the end
D. at the least

8. The word “recall” in the passage is closest in meaning to
A. repeat
B. remember
C. recognize
D. complete

9. According to paragraph 4, white-crowns with which of the following life histories demonstrate the importance of memory in song acquisition
A. White-crowns that learn a dialect before they learn their standard song
B. White-crowns that first heard a dialect of the white-crown song before they were ten days old
C. White-crowns that were moved from where they were born to a different region during their sensitive period
D. White-crowns that were raised in nature through part of their sensitive period and then transferred to the laboratory

10. What can be inferred from paragraph 4 about the local dialect of the species song that a white-crown sings after the sensitive period has closed
A. Those dialects must be learned during the sensitive period and are retained thereafter even in new environments.
B. Those dialects can be learned after the sensitive period if they are common in the local area.
C. Those dialects can be learned after the sensitive period if the birds are raised in the laboratory.
D. Those dialects are learned during the sensitive period and afterward used only when they hear others sing them.

11. According to paragraph 5, which of the following statements is true about white-crowns reared in isolation that are exposed to tapes of other species' songs
A. The tapes cause the white-crowns to begin singing earlier than those not exposed to the tapes.
B. The tapes do not affect the white-crowns' singing development or change their song.

C. The tapes help the white-crowns learn the standard song of their species.
D. The tapes aid the white-crowns in learning local dialects of other species.

12. What can be inferred from paragraph 5 about the song of white-crowns raised in the wild
A. It is less complex than the song of birds raised in isolation.
B. It is the standard song of the white-crown species.
C. It is a mixture of the basic white-crown song and the dialects of other white-crowns that inhabit the local area.
D. It is identical to dialects learned from exposure to tapes.

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

So San Francisco white-crowns need to start quickly making their presence known.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. Male birds have a standard process for acquiring their songs that involves a sensitive period when learning takes place.
B. Birds raised in the wild can differ from those raised in captivity in when they begin to sing their song, which is used to establish their territory.
C. Testosterone levels in male birds affect the quality of the young bird's song.
D. Birds that do not need to establish their territory, such as those raised in isolation, are unlikely to learn to sing.
E. The learning of local dialects demonstrates that song acquisition involves both internal and environmental influences.
F. Birds raised in the wild may acquire the songs of other species in their local area.

Passage 8

Bird Colonies

1 About 13 percent of bird species, including most seabirds, nest in colonies. Colonial nesting evolves in response to a combination of two environmental conditions: (1) a shortage of nesting sites that are safe from predators and (2) abundant or unpredictable food that is distant from safe nest sites. First and foremost, individual birds are safer in colonies that are inaccessible to predators, as on small rocky islands. In addition, colonial birds detect predators more quickly than do small groups or pairs and can drive the predators from the vicinity of the nesting area. Because nests at the edges of breeding colonies are more vulnerable to predators than those in the centers, the preference for advantageous central sites promotes dense centralized packing of nests.

2 The yellow-rumped cacique, which nests in colonies in Amazonian Peru, demonstrates how colonial birds prevent predation. These tropical blackbirds defend their closed, pouchlike nests against predators in three ways. First, by nesting on islands and near wasp nests, caciques are safe from arboreal mammals such primates. Second, caciques mob predators (work together as a group to attack predators). The effectiveness of mobbing increases with group size, which increases with colony size. Third, caciques hide their nests from predators by mixing active nests with abandoned nests. Overall, nests in cluster on islands and near wasp nests suffer the least predation.

3 Coordinated social interactions tend to be weak when a colony is first forming, but true colonies provide extra benefits. ■ Synchronized nesting, for example, produces a sudden abundance of eggs and chicks that exceeds the daily needs of local predators. ■ Additionally, colonial neighbors can improve their foraging by watching others. ■ This behavior is especially valuable when the off-site food supplies are restricted or variable in location, as are swarms of aerial insects harvested by swallows. ■ The colonies of American cliff swallows, for example, serve as information centers from which unsuccessful individual birds follow successful neighbors to good feeding sites. Cliff swallows that are unable to find food return to their colony, locate a neighbor that has been successful, and then follow that neighbor to its food source. All birds in the colony are equally likely to follow or to be followed and thus contribute to the sharing of information that helps to ensure their reproductive success. As a result of their enhanced foraging efficiency, parent swallows in large colonies return with food for their nestlings more often and bring more food each trip than do parents in small colonies.

4 To support large congregations of birds, suitable colony sites must be near rich, clumped food supplies. Colonies of pinyon jays and red crossbills settle near seed-rich conifer forests, and wattled starlings nest in large colonies near locust outbreaks. The huge colonies of guanay cormorants and other seabirds that nest on the coast of Peru depend on the productive cold waters of the Humboldt Current. The combination of abundant food in the Humboldt Current and the vastness of oceanic habitat can support enormous populations of seabirds, which concentrate at the few available nesting locations. The populations crash when their food supplies decline during El Nino years.

5 Among the costs, colonial nesting leads to increased competition for nest sites and mates, the stealing of nest materials, and increased physical interference among other effects. In spite of food abundance, large colonies sometimes exhaust their local food supplies and abandon their nests. Large groups also attract predators, especially raptors, and facilitate the spread of parasites and diseases. The globular mud nests in large colonies of the American cliff swallow, for example, are more likely to be infested by fleas or other bloodsucking parasites than are nests in small colonies. Experiments in which some burrows were fumigated to kill the parasites showed that these parasites lowered survivorship by as much as 50 percent in large colonies but not significantly in small ones. The swallows inspect and then select parasite-free nests in large colonies, they tend to build new nests rather than use old, infested ones. On balance, the advantages of colonial nesting clearly outweigh the disadvantages, given the many times at which colonial nesting has evolved independently among different groups of birds. Still lacking, however, is a general framework for testing different hypothesis for the evolution of coloniality.

1. The word "vicinity" in the passage is closet in meaning to
A. protection
B. region
C. population
D. resources

2. 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. It is more advantageous for birds to choose central locations for their colonies rather than locations near the edges of their territory.
B. Compared to nests at the edges of colonies, centrally located nests are preferred for their safety from predators and therefore are more densely packed together.
C. Predators generally prefer the densely packed, central portion of nesting colonies, which can make this part of the colony more vulnerable to predators.
D. Birds nesting in colonies that are vulnerable to predators tend to prefer more densely packed nests to those less densely packed.

3. Paragraph 2 implies which of the following about yellow-rumped caciques?
A. They are comparatively unlikely to be harmed by the wasps that attack their predators.
B. They are able to protect their nests without using colonies.
C. Mixing active nests with abandoned nests is the least useful way of defending their nests.
D. Most of their predators are members of other bird species.

4. Paragraph 2 claims that yellow-rumped cacique colonies defend themselves from predators in all of the following ways EXCEPT:
A. They establish colonies in hart-to-reach places.
B. They physically attack invading predators.
C. They hide active nests among previously used ones.
D. They limit the size of their colonies so they are hard to find.

5. The phrase “contribute to” in the passage is closet in meaning to
A. learn from
B. depend upon
C. take advantage of
D. add to

6. According to paragraph 3, what advantage do birds gain by hatching all the colony’s eggs at the same time?
A. They are able to time the hatching of their chicks for when predators are not likely to be around.
B. Chicks hatch when food is abundant, which is generally only a few times a year.
C. Even if predators eliminate some of the newly hatched birds, many others will survive.
D. Weaker birds gain protection for their young by synchronizing their nesting behavior with that of the more dominant birds of the colony.

7. According to paragraph 3, cliff swallows closely observe other members of their colony in order to
A. follow successful birds to safe nesting sites
B. learn the location of local predators
C. place their eggs near other birds in the colony
D. find good sources of food

8. Which of the following is a probable effect of the fact mentioned in paragraph 4 that there are few available nesting locations near the Humboldt Current?
A. Seabirds compete with each other for a limited supply of food.
B. The number of seabirds at any one site is extremely large.
C. Some seabirds nest in conifer forests near locust outbreaks.
D. Colonies near the Humboldt Current contain small numbers of seabirds.

9. The word “exhaust” in the passage is closet in meaning to
A. use up
B. leave
C. avoid
D. hide

10. The phrase “On balance” in the passage is closet in meaning to
A. Nevertheless
B. Overall
C. Therefore
D. Periodically

11. In paragraph 5, why does the author discuss experiments in which some burrows were fumigated?
A. To demonstrate that parasites have a very negative effect on large colonies
B. To show that attacks by predators are a worse problem than the spread of parasites
C. To explain how swallows inspect nests for parasites

D. To prove that the benefits of colonial nesting outweigh the disadvantages

12. Which of the following questions is NOT answered by paragraph 5?
A. What causes colonies to have problems with their food supplies?
B. What are the disadvantages of colonial nesting?
C. What percentage of cliff swallow nests are infected by parasites?
D. How can one test the different hypotheses explaining the evolution of bird colonies?

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

The overall survival of the next generation is thus enhanced.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Answer Choices

A. The abundance of food on rocky islands makes them an attractive environment for bird species that nest in colonies, including the yellow-rumped cacique.
B. Because they are not able to physically defend themselves from predators, yellow-rumped caciques rely on hiding their active nests among empty nests to confuse predators.
C. The concentration of bird colonies along coasts makes their inhabitants especially vulnerable to food shortages and weather-related destruction.
D. The challenge of protecting nests and newborn chicks from predators is a major contributor to the evolution of large colonies.
E. Colonial life provides birds with benefits besides protection from predators including help with finding food.
F. There are some disadvantages associated with life in large colonies like the increased rate of infestation by parasites.

Passage 9

Vocalization in Frogs

1 The Túngara frog is a small terrestrial vertebrate that is found in Central America. Túngara frogs breed in small pools, and breeding groups range from a single male to choruses of several hundred males. The advertisement call of a male Túngara frog is a strange noise, a whine that starts at a frequency of 900 hertz and sweeps downward to 400 hertz in about 400 milliseconds. The whine may be produced by itself, or it may be followed by one or several chucks or clucking sounds. When a male Túngara frog is calling alone in a pond, it usually gives only the whine portion of the call, but as additional males join a chorus, more and more of the frogs produce calls that include chucks. Scientists noted that male Túngara frogs calling in a breeding pond added chucks to their calls when they heard the recorded calls of other males played back. That observation suggested that it was the presence of other calling males that incited frogs to make their calls more complex by adding chucks to the end of the whine.

2 What advantage would a male frog in a chorus gain from using a whine-chuck call instead of a whine? Perhaps the complex call is more attractive to female frogs than the simple call. Michael Ryan and Stanley Rand tested that hypothesis by placing female Túngara frogs in a test arena with a speaker at each side. One speaker broadcast a pre-recorded whine call, and the second speaker broadcast a whine-chuck. When female frogs were released individually in the center of the arena, fourteen of the fifteen frogs tested moved toward the speaker broadcasting the whine-chuck call.

3 If female frogs are attracted to whine-chuck calls in preference to whine calls, why do male frogs give whine-chuck calls only when other males are present? Why not always give the most attractive call possible? One possibility is that whine-chuck calls require more energy than whines, and males save energy by only using whine-chucks when competition with other males makes the energy expenditure necessary. However, measurements of the energy expenditure of calling male Túngara frogs showed that energy cost was not related to the number of chucks. Another possibility is that male frogs giving whine-chuck calls are more vulnerable to predators than frogs giving only whine calls. Túngara frogs in breeding choruses are preyed upon by a species of frog-eating bats, Trachops cirrhosus, and it was demonstrated that the bats locate the frogs by homing on their vocalizations.

4 In a series of playback experiments, Michael Ryan and Merlin Tuttle placed pairs of speakers in the forest and broadcast vocalizations of Túngara frogs. One speaker played a recording of a whine and the other a recording of a whine-chuck. The bats responded as if the speakers were frogs: they flew toward the speakers and even landed on them. In five experiments at different sites, the bats approached speakers broadcasting whine-chuck calls twice as frequently as those playing simple whines (168 approaches versus 81). Thus, female frogs are not alone in finding whine-chuck calls more attractive than simple whines. An important predator of frogs also responds more strongly to the complex calls.

5 Ryan and his colleagues measured the rates of predation in Túngara frog choruses of different sizes. Large choruses of frogs did not attract more bats than small choruses, and consequently the risk of predation for

an individual frog was less in a large chorus than in a small one. ■ Predation was an astonishing 19 percent of the frogs per night in the smallest chorus and a substantial 1.5 percent per night even in the largest chorus. ■ When a male frog shifts from a simple whine to a whine-chuck call, it increases its chances of attracting a female, but it simultaneously increases its risk of attracting a predator. In small choruses, the competition from other males for females is relatively small, and the risk of predation is relatively large. ■ Under these conditions it is apparently advantageous for a male Túngara frog to give simple whines. However, as chorus size increases, competition with other males also increases while the risk of predation falls. In that situation, the advantage of giving a complex call apparently outweighs the risks. ■

1. The word "incited" in the passage is closest in meaning to
A. allowed
B. stimulated
C. forced
D. helped

2. According to paragraph 1, male Túngara frogs add chucks to the whine they produce when
A. potential mates are unable to hear the frequency of their whine sounds
B. other males produce louder whine sounds than they do
C. the frogs breed in large pools rather than small ones
D. other males are present in their breeding pool

3. What is the relationship of paragraph 2 in the passage to paragraph 1
A. Paragraph 2 provides additional support for a scientific hypothesis discussed in paragraph 1.
B. Paragraph 2 questions the accuracy of a scientific observation discussed in paragraph 1.
C. Paragraph 2 provides a possible explanation for a scientific observation discussed in paragraph 1.
D. Paragraph 2 identifies some strengths and weaknesses of a scientific hypothesis discussed in paragraph 1.

4. According to paragraph 2, Ryan and Rand conducted an experiment to find out whether which of the following theories was true
A. Male frogs in a chorus use a whine-chuck call in place of a whine call.
B. Female frogs prefer a whine-chuck call to a simple whine call.
C. Male frogs tend to produce more whine-chuck calls than whine calls.
D. Female frogs respond differently to live calls from males than they do to recorded calls.

5. To be attracted to whine-chuck calls in preference to whine calls means
A. to like whine-chuck calls instead of whine calls
B. to like whine-chuck calls in addition to whine calls
C. to like whine-chuck calls followed by whine calls
D. to like whine-chuck calls more than whine calls

6. 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. Males may save energy when competing for mates by using only whine-chuck calls rather than both

whines and whine-chucks.
B. Males expend as much of their energy on whine-chuck calls as on whine calls when competing with other males.
C. Males save energy by using whine-chuck calls only when competing with other males.
D. Males that save energy by using only whines are less able to compete with other males.

7. According to paragraph 4, all of the following are true of the playback experiments EXCEPT:
A. Female frogs and predator bats approached the broadcasting speakers.
B. The bats responded more strongly to the whine-chuck calls than they responded to the whine calls.
C. Each speaker played a different kind of male frog call.
D. The same experiment was repeated at different locations.

8. According to paragraph 4, the playback experiments of Ryan and Tuttle demonstrated which of the following
A. Túngara frogs use both whines and whine-chucks in their vocalizations.
B. Female Túngara frogs are attracted to both whine and whine-chuck vocalizations.
C. Female Túngara frogs and predators of t¨²ngara frogs are attracted to different types of vocalizations.
D. Frog-eating bats are attracted to whine-chuck calls more than to whines alone.

9. The word “substantial” in the passage is closest in meaning to
A. average
B. smaller
C. considerable
D. surprising

10. The word “outweighs” in the passage is closest in meaning to
A. exceeds
B. ignores
C. minimizes
D. disguises

11. According to paragraph 5, all of the following are true about Túngara frog vocalizations EXCEPT:
A. The larger the frog chorus, the smaller the chance there is of a particular frog being eaten by a predatory bat.
B. The larger the frog chorus, the louder each individual frog calls.
C. The smaller the frog chorus, the easier it is for a frog to attract a female.
D. The smaller the frog chorus, the more likely it becomes that a frog using the whine-chuck vocalization will be attacked by a bat.

12. Which of the following can be inferred from paragraph 5 about the behavior of male Túngara frogs
A. When in small choruses they use less effective mating calls to decrease their risk of predation.
B. They avoid joining a large chorus in a breeding pool because it increases the risk of predation.
C. They avoid the use of the whine-chuck call whenever there is the risk of predators.

D. They attempt to avoid predation by making their calls at night.

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

Predation, therefore, is a risk in choruses of all sizes, but the risk varies depending on the type of call used.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Túngara frogs generally use simple calls when they wish to attract a mate, and complex calls when they wish to avoid predation.
B. Two hypotheses have been put forward about why females and frog-eating bats are more attracted to males using whine-chuck calls.
C. The hypothesis that whine calls are used to save energy when males are not in immediate competition with each other has been disproved by showing that chuck calls do not require more energy.
D. Túngara females overwhelmingly favor the whine-chuck call used by the males, but so do certain bats that prey upon Túngara frogs.
E. Most males gather in groups of several hundreds when calling because the rate of predation from bats is so high in small groups.
F. Male Túngara frogs use the whine-chuck call in large groups, where their risk of predation is lower, and the whine call in small groups, where their risk is higher.

Passage 10

Crown of Thorns Starfish and Coral Reefs

1 The crown of thorns starfish, Acanthaster Tlanci, is large, twenty-five to thirty-five centimeters in diameter, and has seven to twenty-one arms that are covered in spines. It feeds primarily on coral and is found from the Indian Ocean to the west coast of Central America, usually at quite low population densities. Since the mid-1950s, population outbreaks at densities four to six times greater than normal have occurred at the same time in places such as Hawaii, Tahiti, Panama, and the Great Barrier Reef. The result has often been the loss of a fifty percent to nearly one hundred percent of the coral cover over large areas.

2 ■A single Acanthaster can consume five to six square meters of coral polyps per year, and dense populations can destroy up to six square kilometers per year and move on rapidly. ■ Acanthasters show a preference for branching corals, especially Acroporids. ■After an outbreak in a particular area, it is common to find that Acroporids have been selectively removed, leaving a mosaic of living and dead corals. ■In places where Acroporids previously dominated the community devastation can be almost complete, and local areas of reefs have collapsed.

3 Areas of dead coral are usually colonized rapidly by algae and often are later colonized by sponges and soft corals. Increases in abundance of plant-eating fish and decreases in abundance of coral-feeding fish accompany these changes. Coral larvae settle among the algae and eventually establish flourishing coral colonies. In ten to fifteen years the reefs often return to about the same percentage of coral cover as before. Development of a four-species diversity takes about twenty years.

4 Two schools of thought exist concerning the cause of these outbreaks. One group holds that they are natural phenomena that have occurred many times in the past, citing old men's recollections of earlier outbreaks and evidence from traditional cultures. The other group maintains that recent human activities ranging from physical coral destruction through pollution to predator removal have triggered these events.

5 One theory, the adult aggregation hypothesis, maintains that most species is more abundant than we realize when a storm destroys coral and causes a food shortage. The adult Acanthasters converge on remaining portions of healthy coral and feed hungrily. Certainly there have been outbreaks of Acanthaster following large storms, but there is little evidence that the storms have caused the enough reef damage to create a food shortage for these starfish.

6 Two other hypotheses attempt to explain the increased abundance of Acanthaster after episodes of high terrestrial runoff following storms. The first hypothesis is that low salinity and high temperatures favor the survival of the starfish larvae. The second hypothesis emphasizes the food web aspect, suggesting that strong fresh water runoff brings additional nutrients to the coastal waters, stimulating phytoplankton production and promoting more rapid development and better survival of the starfish larvae.

7 Those favoring anthropogenic (human influenced) causes have pointed to the large proportion of outbreaks that have been near centers of human populations. It has been suggested that coral polyps are the main predators of the starfish larvae. Destruction of coral by blasting and other bad land use practices would reduce predation on the starfish larvae and cause a feedback in which increases in Acanthaster populations cause still further coral destruction. Unfortunately, there are too few documented instances of physical destruction of coral being followed by outbreaks of Acanthaster for these hypotheses to be fully supported.

8 Another group of hypothesis focuses on removal of Acanthaster's predators. Some have suggested that the predators might have been killed off by pollution whereas others have suggested that the harvesting of vertebrate and invertebrate predators of Acanthaster could have reduced mortality and caused increased abundance of adults. The problem with this group of hypothesis is that it is difficult to understand how reduced predation would lead to sudden increases in Acanthaster numbers in several places at the same time in specific years. It seems probable that there is no single explanation but that there are elements of the truth in several of the hypotheses. That is there are natural processes that have led to outbreaks in the past, but human impact has increased the frequency and severity of the outbreaks.

1. According to paragraph 1 all of the following statements about crown of thorns starfish are true **EXCEPT**

A. Crown of thorns starfish usually have several arms covered in spines.
B. Crown of thorns starfish's main food is coral.
C. Crown of thorns starfish normally live in high population densities.
D. Crown of thorns starfish have caused a significant reduction in coral cover over large areas.

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

A. brief appearance
B. sudden increase
C. exposure
D. observation

3. What can be inferred from paragraph 2 about a coral reef that has a small number of Acroporids

A. It will collapse completely after Acanthaster consumes the Acroporids.
B. It will lose the Acroporids before the other corals when Acanthaster attack it.
C. It will have a mixture of living and dead Acroporids after an Acanthaster attack.
D. It will have a dense population of Acanthaster for several years.

4. The word "accompany" in the passage is closest in meaning to

A. occur along with
B. speed up
C. precede
D. end

5. Which of the following is **NOT** mentioned in paragraph 3 as a consequence of the destruction of an area of a coral by Acanthaster

A. Algae colonize the dead area.

B. Plant-eating fish increase in number.

C. Coral larvae disappear.

D. Species diversity recovers fully over time.

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

A. rest

B. come together

C. spread out

D. depend

7. According to paragraph 5, what is an important weakness of the adult aggregation hypothesis

A. It is based on studies of the deeper parts of coral reefs.

B. It fails to explain the abundance of Acanthaster in the deeper parts of coral reefs.

C. It fails to explain why Acanthaster feed hungrily on healthy coral after a storm.

D. It is not supported by evidence that storms result in food shortages for Acanthaster.

8. What can be inferred from paragraph 6 about the diet of Acanthaster larvae

A. Phytoplankton is an important food source for them.

B. Storm water runoff washes away important nutrients they need.

C. When water temperature rises they have difficulty finding enough food.

D. Storms add needed salt to their diet.

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. Blasting and other bad land use practices would cause the destruction of coral and increase the number of predators that feed on Acanthaster larvae.

B. Bad land use practices would reduce predation on Acanthaster larvae and increase the starfish population which would cause more coral destruction.

C. A reduction of bad land use practices would reduce coral destruction by increasing the survival of Acanthaster larvae and their predators.

D. The destruction of coral through land use activities would cause a decrease in the number of predators that feed on Acanthaster larvae.

10. Why does the author state that "it is difficult to understand how reduced predation would lead to sudden increases in Acanthaster numbers in several places at the same time in specific years"?

A. To indicate the difficulty in proving that increases in Acanthaster numbers occur at the same time in

different areas of the world.

B. To identify a problem with a hypothesis that associates the increase in the population of Acanthaster with a removal of its predators.

C. To argue against the hypothesis that human activities cause sudden population outbreaks of Acanthaster in different places at the same time.

D. To argue against the view that the predators of Acanthaster decline because of pollution and harvesting by humans.

11. Why does the author conclude in paragraph 8 about the causes of sudden population increases of Acanthaster?

A. A sudden population increase in the Acanthaster population could be attributed to natural process as well as human activities.

B. There are no elements of truth in the hypothesis proposed to explain sudden population increases of Acanthaster.

C. It is possible to offer a single explanation for sudden population increases of Acanthaster.

D. Natural processes have been responsible for sudden population increases of Acanthaster in the past while present outbreaks are due to human activities.

12. The word "severity" in the passage is closest in meaning to

A. lands

B. efficiency

C. speed

D. seriousness

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

The crown of thorns starfish is a coral reef predator that preys on coral polyps.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Attempts have been made to explain the sudden increases in Acanthaster populations since the mid-1950s and their impact on coral reefs.

Answer Choices

A. Larvae Acanthaster populations have preyed on coral reefs and caused the loss of coral cover over large areas and the collapse of some coral reef communities.

B. Acanthaster outbreaks have been attributed to natural phenomena such as storms that have created

favorable conditions for the rapid development of the starfish larvae.

C. Acanthaster ourbreaks are the results of natural processes that have led to some increases in the past, as well as of human impact that has sped up the frequency and severity of the outbreaks.

D. There are several hypotheses trying to explain the Acanthaster outbreaks but none have elements of the truth because they contradict each other.

E. The crown of thorns starfish, Acanthaster Tlanci, is large, twenty-five to thirty-five centimeters in diameter, and has seven to twenty-one arms that are covered in spines.

F. The favorable anthropogenic causes, such as destruction of coral by blasting and other bad land use practices, have provided Acanthaster more food sources and therefore stimulate its population outbreaks.

Passage 11

The Origin of Coral Reefs

1 Coral reefs are natural structures formed from deposits of the calcium carbonate secretions of coral, a marine animal that lives in colonies. In general, coral reefs are grouped into one of three categories, atolls, barrier reefs, and fringing reefs. Atolls are usually easily distinguished because they are modified horseshoe-shaped reefs that rise out of very deep water far from land and enclose a lagoon (a body of certain water surrounded by a coral reef). With few exceptions, atolls are found only in the Indo-Pacific area. Barrier reefs and fringing reefs, on the other hand, tend to grade into each other and are not readily separable. Some scientists would prefer to group them into a single category. Both types occur adjacent to a landmass, with a barrier reef being separated from the landmass by a greater distance and deeper water channel than the fringing reef. Fringing reefs and barrier reefs are common throughout the coral reef zones in all oceans.

2 Different types of reefs and reefs in different oceans may have diverse origins and histories. The greatest interest in the origin of reefs has centered on atolls. For many years, humans speculated as to how such reefs could develop in such deep water, miles from the nearest emergent land. This interest was heightened when it was discovered that reef corals cold not live deeper than 50-70 meters. This led to the development of several theories concerning the origin of atolls. Only one need be discussed here——the the theory proposed that atolls grow on the shores of newly formed volcanic islands that have pushed to the surface from deep water. These islands often begin to subside, and if the subsidence is not too fast, reef growth will keep up with the subsidence. The reef growth will then form a barrier reef and, ultimately, an atoll as the island disappears beneath the sea. When the island has disappeared, corals continue to grow on the outside and keep the reef at the surface. On the inside, where the island used to be, quiet water conditions and high sedimentation prevail. These conditions prevent continued vigorous coral growth, hence, a lagoon develops. This theory links all three reef types into evolutionary sequence, but is not an explanation for all fringing and barrier reef types.

3 Since the current surface features of atolls give no evidence of a volcanic base, in the years after the development of Darwin's theory other explanations were offered, and the whole concept of the origin of atolls became embroiled in the controversy over the origin of coral reefs. If Darwin's theory was correct, it must be assumed that drilling down through the current atoll reefs would yield layer after layer of reef limestone until, finally, volcanic rock would be encountered. The ability to drill to the base of atoll reefs and resolved the problem had to wait until the mid-twentieth century in 1953. Ladd and other geologists reported borings at Eriwetok atoll in the Marshall Islands that penetrated 1,283meters of reef limestone and then hit volcanic rock. ■This was the evidence that Darwin's theory was substantially correct. ■The correctness of this theory has been strengthened by the discovery of flat-topped mountains or guyots that, at present, have their tops many hundreds or thousands of meters below the ocean surface, but have on their surface the remains of shallow water corals. ■Evidently, these mountains sank too fast for reef growth to keep above the ocean surface. ■

4 Although the subsidence theory links all three reef types in a successional sequence, not all barrier reefs and fringing reefs can be explained by this mechanism. Indeed, the reasons barrier and fringing reef types occur around continental margins and high non-volcanic islands are simply that these areas offer suitable environmental conditions for the growth of reefs and a suitable substrate (surface) on which to begin growth. The extensive reefs around the Indonesian Islands, the Philippines, New Guinea, Fiji and most of the Caribbean Islands are there because a suitable substrate in shallow water existed on which they could initiate growth. In none of these areas are large land areas subsiding, not will these reefs ultimately become atolls.

1. According to paragraph 1, all of the following are true of atolls EXCEPT
A. Most atolls occur in the Indo-Pacific area.
B. Atolls occur only in very deep waters.
C. Atolls are more common than other types of reefs.
D. Atolls occur far from a landmass.

2. According to paragraph 1, fringing reefs and barrier reefs can be identified by
A. their similarities to atolls
B. their organization into groups of separable parts
C. their distance from the nearest landmass
D. whether or not they enclose a lagoon

3. The phrase “was heightened” in the passage is closest in meaning to
A. developed
B. varied
C. continued
D. increased

4. The word “prevail” in the passage is closet in meaning to
A. dominate
B. combine
C. spread
D. compete

5. Which of the following can be inferred from paragraph 2 as the reason that the origin of atolls has generated more interest than has the origin of other types of reefs?
A. Most reefs have a predictable shape, but atolls do not.
B. Atolls appear to form more rapidly than other kinds of reefs.
C. The animals that form coral reefs cannot live in water below 70 meters, but atolls only form in very deep water.
D. Atolls have more diverse origins and histories than other types of reefs.

6. According to paragraph 2, Darwin’s subsidence theory provided an answer to each of the following questions EXCEPT

A. How does a lagoon develop?
B. Why do volcanic islands subside?
C. How does a fringing reef become a barrier reef?
D. What happens to coral growth when a volcanic island subsides slowly?

7. What can be inferred from paragraph 2 about the development of atolls according to Darwin's theory?
A. All atolls begin as fringing reefs.
B. An atoll will not develop if an island subsides too slowly.
C. Most atolls will eventually become barrier reefs.
D. The formation of a lagoon accelerates the overall development of an atoll.

8. The word "substantially" in the passage is closet in meaning to
A. often
B. largely
C. probably
D. undoubtedly

9. Which of the following is mentioned in paragraph 3 as the reason many scientists doubted Darwin's theory of how atolls form?
A. After Darwin's five-year voyage, different kinds of atolls than those he observed were discovered.
B. Scientists discovered guyots, or flat-topped mountains, below the ocean's surface.
C. Surface features of atolls do not show any signs of a volcanic base.
D. Drilling through layers of atoll reef did not produce the results Darwin predicted.

10. What can be inferred from paragraph 2 and 3 about the volcanic rock found by the geologists in the Marshall Islands?
A. It extends from the surface to 1,283 meters deep.
B. It was the first guyot ever discovered by researchers.
C. It formed after the limestone layers of the Eriwetok atoll.
D. It was once an island existing above the ocean surface.

11. The word "initiate" in the passage is closet in meaning to
A. begin
B. encourage
C. establish
D. maintain

12. In paragraph 4, why does the author discuss the reefs around the Indonesian Islands, the Philippines, New Guinea, Fiji, and the Caribbean Islands?
A. To argue that these islands have suitable environmental conditions for subsidence
B. To support the claim that the subsidence theory cannot explain the formation of all barrier and fringing reefs.
C. To indicate how different barrier and fringing reefs could be from atolls

D. To identify reefs that grow around non-volcanic islands

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

Had subsidence occurred more slowly, the reefs would have eventually become atolls.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Because of its many marine animal colonies, the Indo-Pacific area contains the world's largest number of atolls, barrier reefs, and fringing reefs.
B. In the years after Darwin's voyage, researchers discovered that Darwin was incorrect in believing that all fringing reefs and barrier reefs will eventually become atolls.
C. The discovery of guyots suggested to researchers that atolls would never form in non-volcanic islands where fringing and barrier reefs are common.
D. Darwin argued that atolls are formed when volcanic islands surrounded by fringing reefs begin to slowly sink, forming first a barrier reef and finally an atoll.
E. Darwin's theory was confirmed by the discovery of volcanic rock underneath the limestone layers of an atoll in the Marshall Islands.
F. The fringing reefs and barrier reefs that grow in the waters of continental margins and around non-volcanic islands will never become atolls.

Passage 12

The Role of Diapause

1 If conditions within an organism's environment occasionally or regularly become harsh, it may be advantageous for an organism to have a resistant stage built into the life cycle. In such a life history strategy, the organism suspends any growth, reproduction, or other activities for a period of time so that they may occur at a later, more hospitable time. This genetically determined resting stage, characterized by the cessation of development and protein synthesis and suppression of the metabolic rate, is called diapause. Many other kinds of resting stages, with different levels of suppression of physiological activities, are known. Some of these resistant stages can be extremely long-lived. In one case, seeds of the arctic lupine, a member of the pea family recovered from ancient lemming burrows in the Arctic, germinated in three days even though they were carbon-dated at more than 10,000 years old!

2 Unfavorable conditions that are relatively predictable probably pose a simpler problem for organisms than do unpredictable conditions. Adaptations to the regular change of seasons in the temperate and polar regions may be relatively simple. For example, many seeds require a period of stratification, exposure to low temperatures for some minimum period, before they will germinate. ■ This is a simple adaptation to ensure that germination occurs following the winter conditions rather than immediately prior to their onset. ■ In contrast, unfavorable conditions that occur unpredictably pose considerable problems for organisms. ■ In fact, unpredictability is probably a greater problem than is the severity of the unfavorable period. ■ How can organisms cope with the unpredictable onset of good or poor conditions?

3 Many adaptations to this general problem are based on a resting stage that awaits favorable conditions. We will consider two examples from the vertebrates. The first is the red kangaroo. This marsupial inhabits the deserts of central Australia where the onset of rains and the resulting sudden growth of vegetation are extremely unpredictable. Obviously, it is advantageous for a kangaroo female to produce young at a time when plant productivity is sufficient to support her offspring. For such a relatively large mammal, however, gestation (the period of development during pregnancy) is so long that if a female waited to mate and carry the young until after the rains came, the favorable period might be past. The kangaroo's life history adaptation to this problem involves the use of embryonic diapause during gestation (development in the uterus).

4 After a 31-day gestation period, the female gives birth to a tiny helpless young typical of marsupials. The newborn crawls into the mother's pouch and attaches to a teat where it continues to grow and develop. After 235 days it leaves the pouch but remains with the mother and obtains milk from her. Two days after giving birth, the female mates again. The fertilized egg enters a 204-day period of embryonic diapause during which it remains in the uterus but does not attach. It then implants, and 31 days later, birth of the second young occurs. Note that the first young leaves the pouch at just this time. Again, the female mates, fertilization occurs, and another diapause follows. The eventual result is that at any one time, the female has three young at various stages of development: one in diapause, one in the pouch, and one outside the pouch. Among other benefits, this allows her to freeze the development of an embryo during times of drought and food shortage until the offspring in the pouch is able to leave.

5 A similar strategy—accelerated development combined with a resting stage—has also allowed amphibians to inhabit deserts. The spadefoot toads, such as Couch's spadefoot toad, inhabit some of the most severe deserts in North America. Adults of this species burrow deeply into the substrate where it is cooler and perhaps more moist. Here they enter into a resting state in which they are covered with a protective layer of dead skin. When it rains, the adults emerge and congregate to mate at temporary ponds. Development is greatly accelerated: the eggs hatch within 48 hours, and the tadpoles change into toads at 16-18 days. Consequently, they can complete the life cycle during the brief window of favorable conditions, then return to the resistant resting stage to await the next rainfall. Resting stages thus comprise a series of adaptations that allow the species to avoid the most difficult conditions for life.

1. According to paragraph 1, why do some organisms have a resting stage during their life cycle?
A. To recover from injuries suffered during harsh conditions
B. To devote all of their energy to a period of growth and reproduction
C. To wait for local conditions to become favorable for important life events
D. To prepare to move to a different environment if conditions become harsh

2. Why does the author mention "seeds of the arctic lupine"?
A. To argue that members of the pea family are extremely resistant to cold temperature
B. To provide information about what ancient lemmings ate during their long resting periods
C. To provide an example of an organism with a resting stage that has many different levels of suppression of physiological activities
D. To support that some resting stages last an extremely long time.

3. According to paragraph 2, why do many seeds require a period of stratification?
A. To slowly build up a tolerance for lower and lower temperatures
B. To guarantee that the seeds grow after and not before unfavorable weather
C. To make sure that the seeds can deal with unpredictable conditions
D. To give the seeds enough time to germinate before winter /

4. The word "severity" in the passage is closet in meaning to
A. length
B. harshness
C. unexpectedness
D. completeness

5. Why did the author mention red kangaroo's diapause in paragraph 3?
A. To serve as an example of the explanation of diapause proposed at the beginning of paragraph 3
B. To provide an exception to animal's diapause theory
C. To argue that not all of the animals need to diapause
D. To prove that red kangaroo's gestation is unnecessary

6. According to paragraph 4, all of the following statements are true about the young offspring of the red kangaroo EXCEPT:
A. After birth, a newborn crawls into the mother's pouch where it grows and develops.
B. After a young kangaroo leaves its mother's pouch, it still needs its mother's milk.
C. A mother usually gives birth to three baby kangaroos at the same time.
D. During unfavorable conditions, the mother kangaroo can stop the development of her embryo

7. Paragraph 4 supports all of the following statements about the red kangaroo of central Australia EXCEPT:
A. A female kangaroo mates again shortly after her newborn enters her pouch.
B. During diapause, a young kangaroo stays in the female's pouch and growth of a second fertilized egg inside the uterus is delayed.
C. To put different young kangaroos at various stages of development is advantageous for the female kangaroo to handle them at the same time.
D. The pause of the development of an embryo has more benefits for preparing it to avoid the harsh times than for competing with its siblings.

8. What is the main purpose of paragraph 4 in the passage?
A. To give the details of an adaptation mentioned in paragraph 3
B. To describe an adaptation different from the one explained in paragraph 3
C. To introduce an adaptation that is described in detail in paragraph 5
D. To discuss an adaptation that is set as successful as the one mentioned before.

9. The word "congregate" in the passage is closet in meaning to
A. begin
B. gather
C. hurry
D. expect

10. The word "comprise" in the passage is closet in meaning to
A. consist of
B. bring about
C. are similar to
D. take the place of

11. According to paragraph 5, how do amphibians such as spadefoot toads survive the severe heat conditions in the North American deserts?
A. They dig down into the ground and go into a resistant resting state.
B. They remain in the ponds that develop after it has rained.
C. They lose their outer layer of skin.
D. Their eggs live dormant until the desert air becomes cooler and more moist.

12. According to paragraph 5, which of the following occurs during the life cycle of the spadefoot toad?
A. The female's eggs hatch under the surface of the desert.

B. The adults mate during the dry period.
C. The newborn grows into an adult before unfavorable conditions return.
D. The newborn enters a resting stage before it becomes an adult.

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

Such adaptations to predictable conditions can also be made by animals, such as by hibernating during the coldest months.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer choices

A. The diapause stage evolved very early and is most common in species that first appeared more than 10,000 years ago.
B. Unpredictable conditions are more problematic for organisms than are fairly predictable changes such as the seasons.
C. Some seeds may germinate in three days even if they have been exposed to very low temperatures for a long time.
D. Some marsupials can care for three newborns in their pouch at the same time, allowing the young to leave the pouch only when conditions are favorable for their growth.
E. The female red kangaroo adapts to unfavorable conditions by delaying the development of the embryo in the uterus.
F. Some amphibians adapt to arid environments by completing accelerated development with resting stages deep underground.

Passage 13

What Controls Flowering

1 The timing of flowering and seed production is precisely tuned to a plant's physiology and the rigors of its environment. In temperate climate plants lost flower early enough so that their seeds can mature before the deadly winds of autumn. Depending on how quickly the seed and food develop flowering may occur in spring as it does in oaks; in summer as in lettuces; or even in autumn as in asters.

2 What environmental cues do plants use to determine the seasons? Most cues such as temperature or water availability are quite variable: autumn can be warm; a late snow could fall in spring; also summer might be unusually cool and wet. So the only reliable cue is day length: longer days always mean that spring and summer are coming; shorter days foretell the onset of autumn and winter.

3 With respect to flowering botanists classify plants as day neutral, long day or short day. A day neutral plant flowers as soon as it has sufficiently grown and developed regardless of the length of day. The neutral plants include tomatoes, corn, snapdragons and roses. Although the naming is traditional, long day and short day plants are better described as short night and long night plants because their flowering actually depends on the duration of continuous darkness rather than on day length. Short night plants (which include lettuces, spinach, iris, clover and petunias) flower when the length of darkness is shorter than a species' specific critical period. Long night plants (including asters, potatoes, soy beans, goldenrod and cockleburs) flower when the length of uninterrupted darkness is longer than the species' specific critical period. Thus spinach is classified as a short night plant because it flowers only if the night is shorter than eleven hours (its critical period), and the cocklebur is a long night plant because it flowers only if an uninterrupted darkness lasts more than 8.5 hours. Both of these plants will flower with ten-hour nights.

4 Plant scientists can induce flowering. Plant scientists can induce flowering in the cocklebur by exposing leaves to long nights (longer than its 8.5 hour critical period) in a special chamber, while the rest of the plant continues to experience short nights. Clearly, a signal that induces flowering transmitted from the leave to the flowering bud. Plant physiologists have been attempting for decades to isolate these elusive signaling molecule often called florigen (literally, flowering maker). Some researchers believe they are close to demonstrating a flower's stimulating substance for specific type of plant. Using genetic manipulation, it is likely, however, that interactions among multiple and yet unidentified plant hormones stimulate or inhibit flowering, and that these chemicals may differ among plant species. Researchers have had more success in determining how plants measure the length of uninterrupted darkness, which is a crucial stimulus for producing whatever substance control flowering.

5 To measure continuous darkness, a plant needs two things: some sort of metabolic clock to measure time (the duration of darkness) and a light detecting system to set the clock. Virtually all organisms have an internal biological clock that measures the time even without environmental cues. In most organisms

including plants, the biological clock is poorly understood, but we know that the environmental cues, particularly light, can reset the clock. How do plants detect light? The light detecting system of plants is a pigment in leaves called phytochrome (literally, plant color).

6 Plants seem to use the phytochrome system in combination with their internal biological clocks to detect the duration of continuous darkness. Cockleburs, for example, flower under the schedule of sixteen hours of darkness and eight hours of light. However, interrupting the middle of the dark period with just a minute or two of lights prevents flowering. ■Thus their flowering is controlled by the length of continuous darkness. ■It is evident that even brief exposure to sunlight or white light will reset their biological clocks. ■The color of the light used for the light exposure is also important. A nighttime flash of pure red light inhibits flowering, while flash of light at the far-red end of the spectrum has no effect on flowering, as if no light were detected. ■

1. The word "rigors" in the passage is closest in meaning to

A. characteristics
B. advantages
C. stability
D. difficulties

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

A. severely
B. quickly
C. exactly
D. efficiently

3. Paragraph 1 suggests which of the following are the seeds of asters in temperate climate?

A. They mature a short time after the plant blooms.
B. They begin to develop in autumn and mature in winter.
C. They were more plentiful than those of oaks or lettuces.
D. They are not designed to survive temperate climate.

4. The author mentions "tomatoes, corn, snapdragons and roses" in order to

A. Name some of the most well-developed and commonly grown domestic plants
B. Provide examples of plants whose flowering is not determined by length of day
C. Demonstrate that the neutral plants are more common than long-day or short-day plants
D. Support the claim that some plants flower at night as well as during the day

5. 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. Traditionally, long day and short day plants are better known as short night and long night plants because they actually flower during periods of continuous darkness.

B. The naming of long day and short day plants is traditional and depends on whether they flower during long days or long nights.
C. Whether plant is better described in terms of day length or night depends on whether it flowers during the day or during continuous darkness.
D. Despite their traditional names, the flowering of what are called long day and short day plants actually depends on the length of continuous darkness rather than on day length.

6. According to paragraph 3, why is spinach considered a short night plant?
A. It will not flower if it experiences too many hours of uninterrupted darkness.
B. It flowers after certain number of short nights.
C. It flowers as soon as the nights become shorter than the days.
D. It flowers for only a short period of time usually at night.

7. The word "induce" in the passage is closest in meaning to
A. bring about
B. prevent
C. settle down
D. control

8. According to paragraph 4 what had experiments with cockleburs revealed about the flowering process?
A. Flowering is triggered not by multiple chemicals but by a single hormone in the bud.
B. The entire plant must experience the crucial period of darkness in order to flower.
C. The signal to begin flowering can originate in the leaves.
D. Flowering is not always related to length of darkness.

9. According to paragraph 4, which of the following is true of the signal for the cocklebur to flower?
A. Only certain leaves produced signal.
B. The signal must arise from the flower bud.
C. The signaling molecule has not been chemically identified.
D. The length of uninterrupted darkness cockleburs need in order to signal varies a lot.

10. The word "inhibit" in the passage is closest in meaning to
A. speed up
B. restrain
C. contribute to
D. prolong

11. According to paragraph 5, what is the function of plants' phytochrome?
A. measuring time durations in the absence of environmental cues
B. helping reset the plant's biological clock through light detection
C. stimulating the growth for plants' leaves

D. determining the color of the plants' leaves

12. According to paragraph 6, which of the following types of light will not reset a cocklebur's biological clock?
A. white light
B. sunlight
C. pure red light
D. far-red light

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

But not all types of light will have this effect.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Attempts have been made to explain what controls the flowering.
●
●
●

Answer Choices
A. Day neutral plants flower as soon as they have sufficiently developed but the flowering of short night and long night plants is dependent on the duration of continuous darkness.
B. Scientists do not yet know what chemical or combination of chemicals is responsible for the signal to flower, but they do know that the signal travels from leaf to bud.
C. Plants measure darkness through an internal biological clock which is reset when the plant's phytochrome detects certain types of light.
D. Short night plants flower if any part of the plant is exposed to continuous darkness, but long night plants will not flower if even one leaf experiences a flash of light.
E. Day neutral plants use the phytochrome system to detect environmental conditions other than light, which may affect the viability of their flowers and seeds.
F. Once a flower has started to bloom, the color and duration of light it is exposed to is important, because some kind of light will prevent flowering while others will have no effect.

Passage 14

Removing Dams

1 For nearly a century, two United States governmental agencies, the United States Army Corps of Engineers and the Bureau of Reclamation, have constructed dams to store water and to generate electricity. Building these dams provided cheap electricity, created jobs for workers, stimulated regional economic development, and allowed farming on lands that would otherwise be too dry. But not everyone agrees that big dam projects are entirely beneficial. Their storage reservoirs stop the flow of rivers and often submerge towns, farms, and historic sites. They prevent fish migrations and change aquatic habitats essential for native species.

2 The tide may have turned, in fact, against dam building. In 1998 the Army Corps announced that it would no longer be building large dams. In the few remaining sites where dams might be built, public opposition is so great that getting approval for projects is unlikely. Instead, the new focus may be on removing existing dams and restoring natural habitats. In 1999 Bruce Babbitt, then the United States interior secretary, said, of the 75,000 large dams in the United States, most were built a long time ago and are now obsolete, expensive, and unsafe. They were built with no consideration of the environmental costs. As operating licenses come up for renewal, dam removal and habitat restoration to original stream flows will be among the options considered.

3 The first active hydroelectric dam in the United States to be removed against the wishes of its owners was the 162-year-old Edwards Dam, on the Kennebec River in Augusta, Maine. For many years, the United States Fish and Wildlife Service had advocated the removal of this dam, which prevented migration of salmon, shad, sturgeon, and other fish species up the river. In a precedent-setting decision, the Federal Energy Regulatory Commission ordered the dam removed after concluding that the environmental and economic benefits of a free-flowing river outweighed the electricity generated by the dam. In July 1999 the dam was removed and restoration work began on wetlands and stream banks long underwater.

4 The next dams likely to be taken down are the Elwha and Glines Dams on the Elwha River in Olympic National Park in the state of Washington. Built nearly a century ago to provide power to lumber and paper mills in the town of Port Angeles, these dams blocked access to upstream spawning beds for six species of salmon on what once was one of the most productive salmon rivers in the world. Simply removing the dams will not restore the salmon, however. ■ Where 50-kilogram king salmon once fought their way up waterfalls to lay their eggs in gravel beds, there now are only concrete walls holding back still water and deep beds of muddy deposits. ■ Removing the mud, uncovering gravel beds where fish spawn, and finding suitable salmon types to rebuild the population is a daunting task. ■ Congress will have to appropriate somewhere around $300 to $400 million to remove these two relatively small dams and rehabilitate the area.■

5 Environmental groups, encouraged by these examples, have begun to talk about much more ambitious projects. Four giant dams on the Snake River in Washington State, for example, might be removed to

restore salmon and steelhead fish runs to the headwaters of the Columbia River. The Hetch Hetchy Dam in Yosemite National Park might be taken down to reveal what John Muir, the founder of the prestigious environmental organization Sierra Club, called a valley just as beautiful and worthy of preservation as the majestic Yosemite. Some groups have even suggested removing the Glen Canyon Dam on the Colorado River. In each of these cases, powerful interests stand in opposition. These dams generate low-cost electricity and store water that is needed for agriculture and industry. Local economies, domestic water supplies, and certain types of recreation all would be severely impacted by destruction of these dams.

6 How does one weigh the many different economic, cultural, and aesthetic considerations for removing or not removing these dams? Do certain interests, such as the rights of native people or the continued existence of native species of fish or wildlife, take precedence over economic factors, or should this be a utilitarian calculation of the greatest good for the greatest number? And does that number include only humans or do other species count as well?

1. According to paragraph 1, building dams was beneficial in each of the following ways EXCEPT
A. increasing the amount of land that could be used for farming
B. strengthening local economies
C. increasing the availability of low-cost electricity
D. expanding the aquatic habitats of native species

2. According to paragraph 2, the likelihood that new dams will be built has decreased because
A. construction costs have increased enormously
B. safety standards have become much higher
C. public opposition to dam construction has increased
D. at most suitable sites an existing dam would have to be removed first

3. The word "obsolete" in the passage is closest in meaning to
A. unpopular
B. inefficient
C. out of date
D. unnecessary

4. Paragraph 2 supports which of the following ideas about operating licenses for large dams?
A. Since 1999 licenses have been renewed only for small dams.
B. Before 1999, owners applying for a license renewal were more likely to have their applications than they were after that date.
C. Strong public opposition to their renewal was common even before 1999, but it was based on safety considerations, not on environmental ones.
D. The environmental cost of dams has been a minor consideration in license renewal applications since 1999.

5. According to paragraph 3, why did the United States Fish and Wildlife Service want the Edwards Dam removed?

A. Because the age of the dam made it unsafe
B. Because the dam was negatively affecting various species of fish
C. Because the dam had caused wetlands to form
D. Because the dam no longer provided economic benefits

6. Paragraph 3 suggests that one main consideration for keeping the Edwards Dam was
A. the electricity it generated
B. the length of time it had been in operation
C. the high cost of removing it
D. the fact that removing it would set a bad example

7. According to paragraph 4, why would removing the Elwha and Glines dams not be enough to restore salmon to the Elwha River?
A. They are not the only dams on the Elwha River.
B. The lumber and paper mills in Port Angeles also block access to upstream spawning beds.
C. Too many species of salmon are competing for survival in one river.
D. The dams have left the river's spawning beds in an unusable condition.

8. The word "suitable" in the passage is closest in meaning to
A. new
B. healthy
C. appropriate
D. similar

9. The word "ambitious" in the passage is closest in meaning to
A. impressive but difficult to achieve
B. dangerous and require considerable planning
C. complex and unlikely to be complete
D. greatly needed

10. According to paragraph 5, why do environmental groups want the Hetch Hetchy Dam removed?
A. To restore salmon and steelhead runs to the Snake River
B. To allow access to the headwaters of the Columbia River
C. To increase the size of Yosemite National Park
D. To restore a valley to its original beauty

11. The phrase "take precedence over" in the passage is closest in meaning to
A. affect
B. have greater importance than
C. get included among
D. minimize

12. What is the role of paragraph 6 in the passage?

A. To propose a method for deciding whether a given dam should be removed
B. To emphasize the complexity of the issues involved in deciding what should be done about dams
C. To suggest that the recent tendency not to build new dams may be wrong
D. To sum up the points made earlier in the passage about the advantages and disadvantages of removing dams

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

But aside from the technical challenges, the project will also pose a serious financial challenge.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Until recently, the emphasis in dam building was on the economic benefits of low-cost energy and water that dams provided, but more attention is now being paid to the damage they cause.
B. Environmental groups now have a very good chance of forcing the removal of two major dams, the Glen Canyon Dam on the Colorado and the Hetch Hetchy Dam in Yosemite.
C. The removal of dams remains controversial because of high restoration costs, loss of low-cost electricity, and the loss of water storage facilities.
D. Since the late 1990s, the government has stopped building large dams, instead focusing on removing existing dams and restoring natural habitats.
E. Until recently, the main reason for removing dams was to restore salmon runs, but it is now recognized that a more important reason to remove dams is that they are no longer safe.
F. Although the U. S. government originally planned to remove the Elwha and Glines Dams in Washington, the enormous expense of removal has resulted in a postponement of this effort.

Passage 15

Early Modern Industrialization

1 Industrial output increased smartly across nearly all of Europe between 1450 and 1575. Although trade with the Americas had something to do with this, the main determinants of this industrial advance lay within Europe itself.

2 Population grew from 61 million in 1500 to 78 million a century later, and the proportion of Europeans living in cities of 10,000 or more—and thus dependent on the market for what they consumed—expanded from less than 6 percent to nearly 8 percent during the same period. More important than sheer numbers, many Europeans' incomes rose. This was especially true among more fully employed urban groups, farmers who benefited from higher prices and the intensifying commercialization and specialization in agriculture (which also led them to shed much non-agricultural production in favor of purchased goods), and landlords and other property owners who collected mounting rents. Government activities to build and strengthen the state were a stimulus to numerous industries, notably shipbuilding, textiles, and metallurgy. To cite just one example, France hastened to develop its own iron industry when the Hapsburgs—the family that governed much of Europe, and whom France fought repeatedly in the sixteenth century—came to dominate the manufacture of weapons in Germany and the cities of Liege and Milan, which boasted Europe's most advanced technology.

3 The supply of goods was also significantly modified. ■Migration had long been critical for the diffusion of knowledge that spawned new trades or revived others. Now thousands of workers, and sizeable amounts of capital, moved from one region to another. ■At the same time, new commodities appeared on the market, often broadening and deepening demand. ■Most were inexpensive items destined for individual consumers. ■Knitted stockings, ribbon and lace, buttons, starch, soap, vinegar brewed from beer, knives and tools, pots and ovens, and many more goods, formerly made only for local sale, now entered into channels of national or international trade. The best-known and most widely adopted new industry was printing with movable type, which spread swiftly throughout Europe after Johannes Gutenberg perfected his innovation in 1453. Despite isolated cases of resistance—the scribes' guild (an association of book copiers) delayed printing's introduction into Paris for twenty years, for example—more than 380 working presses had sprung up by 1480, and 1,000 (in nearly 250 towns) by 1500. Between 1453 and 1500, all the presses of Europe together turned out some 40,000 editions (known as incunabula), but from 1501 to 1600, that same quantity was produced in Lyon and Paris alone.

4 In metals and mining, technical improvements were available that saved substantially on raw materials and fuel, causing prices to drop. The construction of ever-larger furnaces capable of higher temperatures culminated in the blast furnace, which used cheaper ores and economized on scarce and expensive wood, cutting costs per ton by 20 percent while boosting output substantially. A new technique for separating silver from copper allowed formerly worthless ores to be exploited. Better drainage channels, pumps, and other devices made it possible to tunnel more deeply into the earth as surface deposits began to be exhausted. In most established industries, however, technological change played little role, as in the past,

new customers were sought by developing novel products based on existing technologies, such as a new type of woolen cloth with the texture of silk.

5 Sharply declining transaction costs (the direct and indirect expenses associated with transporting, distributing, and marketing goods and services) were more influential. On a general level, the decrease was due to greater security thanks to the lessening of wartime disruptions and to the economies of scale achieved when selling to large, concentrated urban populations. More specifically, it can be traced to transport innovations such as the carrack, a large ship that reduced rates for oceanborne freight by up to 25 percent, and big four-wheeled Hesse carts for overland routes. The spread of efficient organizational forms further contributed to declining costs, as did falling interest rates, which dropped from 20 percent or 25 percent in the mid-fifteenth century to 10 percent 100 years later.

1. The word “determinants” in the passage is closet in meaning to
A. origins
B. long-term benefits
C. causes
D. effects

2. The word “hastened” in the passage is closet in meaning to
A. needed
B. rushed
C. decided
D. attempted

3. According to paragraph 2, the fact that more people lived in European cities meant that
A. more people had to purchase food and other basic necessities rather than producing these things themselves
B. industrial output increased because more people were available for employment in manufacturing
C. fewer people were available for agricultural work and thus farmers were forced to pay higher wages
D. more people competed for full-time urban employment, driving wages down

4. Which of the following is discussed in paragraph 2 as contributing to the growth in the market for manufactured goods that occurred in Europe after 1500?
A. Lower costs for food and housing
B. Advancements in manufacturing technology
C. Higher incomes
D. Increased property ownership by farmers

5. The word “diffusion” in the passage is closet in meaning to
A. concentration
B. spreading
C. questioning
D. attraction

6. The word “perfected” in the passage is closet in meaning to
A. marketed
B. completed
C. announced
D. exhibited

7. According to paragraph 3, which of the following was true about the new technology for printing with movable type?
A. It met with opposition wherever attempts were made to introduce it.
B. It spread with increasing rapidity throughout Europe after 1453.
C. It rapidly turned printing into the most important industry in Paris.
D. It was controlled in most places by the local scribes’ guild.

8. Which of the following is NOT identified in paragraph 4 as an improvement made possible by technological developments?
A. The mining of ores that had previously been too deep to reach
B. The use of previously worthless ores
C. A reduction in cost of expensive wood
D. The construction of furnaces that cost less to operate

9. Which of the sentences below 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. Although most established industries continued operating with existing technologies, some novel products required the development of new technologies.
B. In the past, technological change had been unimportant in most established industries because the products that customers wanted could be produced using existing technologies.
C. In most established industries, technological change played a role only when it made possible the production of novel products that attracted new customers.
D. Most established industries attracted new customers by developing new products based on existing technologies rather than by applying new technologies.

10. According to paragraph 5, what was one reason for the increase in security?
A. Reductions in transaction costs
B. Improvements to overland routes
C. Less war
D. More sophisticated technologies for distributing goods

11. In paragraph 5, the author mentions the transport innovations of the carrack and Hesse carts in order to
A. provide examples of wartime inventions that were adapted for use in industry
B. explain how knowledge of more efficient organizational forms was spread
C. provide reasons for the decline in transaction costs
D. identify innovations that led to falling interest rates

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

For example, during this period, international investment in Switzerland rapidly expanded after the country was flooded by skilled workers fleeing religious persecution in Italy and France.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

13. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer choices

A. Industrial development was stimulated by rising incomes and growing populations—especially in market-dependent urban centers—and by government support for certain industries.
B. Numerous technological innovations that could be applied to the manufacture of consumer goods grew out of the weapons industry that had developed in Germany, Liege, and Milan.
C. New industries that manufactured goods for individual consumers were able to keep prices low in large part because of new technologies designed to accommodate economies of scale.
D. With increased mobility of labor and capital, more and more goods—especially inexpensive consumer goods—were produced for wide distribution rather than being limited to local markets
E. Industrial development was limited in some areas due to the high costs of transportation, labor, and rents, and because of the localized nature of industrial knowledge.
F. Lower prices for manufactured goods were the result of lower interest rates, of improvements in transportation, security, and organization, and of innovations in metal-making, mining, and printing.

Passage 16

The Collapse of the Mayans

1 The Mayan society of Central America (2000 B.C. – A.D. 1500), like other ancient states, was characterized by populations unprecedented both in their size and density. It was not just the number of people that lived in the Mayan city-states but also the relatively small area into which they were concentrated. To support such populations, societies developed various intensive agricultural methods, including large-scale irrigation and hill-slope terracing (the cutting of horizontal ridges into hillsides so they can be farmed). These were designed both to increase yields from a given area and to increase the absolute amount of land under cultivation. These strategies were in essence very successful: hey made it possible to feed larger populations than ever before and supported the growth of cities. But they also placed considerable strains on the environment and rendered it increasingly fragile and vulnerable to unexpected climatic events, and even to short-term fluctuations. Thus, the argument is that because of their size and ever more intensive agriculture, the Mayan and other ancient state societies were fundamentally unsustainable.

2 Claims about environmental degradation and disaster have figured prominently in discussions of the collapse of the Mayan city-states of the Central American lowlands. When two explorers came upon the Mayan cities in the 1830s, they were struck by the sight of tall pyramids and elaborately carved stones among luxuriant forest growth. Here was the archetypal picture of a great lost civilization: abandoned cities submerged in vegetation. Theories of catastrophic collapse or apocalyptic overthrow came naturally to mind to explain these dramatic scenes.

3 Recent studies of the Mayan collapse (beginning around A.D. 900) have emphasized the gradual and progressive nature of the process, beginning in earnest in the South and advancing northward. It was not a single, sudden event, as had once been thought. Warfare and social unrest are thought to have played a part, but these may well have arisen through pressure from other causes. The Mayan cities had, after all, flourished for over 500 years and had frequently been at war with each other.

4 But what about the possibility of food shortages? These could have come about through either natural or humanly induced changes in the environment. Increasingly fierce competition between Mayan cities led to an upsurge of monument construction during the eighth and ninth centuries A.D., which would have placed added strain on agricultural production and expansion. Interstate rivalry may hence have pushed the Maya toward overexploitation of their fragile ecosystem. Deforestation and soil erosion might ultimately have destroyed the capacity of the land to support the high population levels of the Mayan cities, leading to famine, social unrest, and the collapse of the major Mayan centers.

5 Yet it may be incorrect to lay the blame entirely on human action. ■ Several of the lowland cities, such as Tikal, appear to have depended heavily on the cultivation of raised fields set in the marshy depressions known as bajos, which today flood intermittently in the rainy season but may originally have been permanent lakes. ■ The raised-field system of intensive cultivation (created by digging surrounding canals

and using the soil removed to elevate the fields for planting) allows year-round food production through the constant supply of soil nutrients that erode into the drainage ditches dug around the raised fields, nutrients that are then collected and replaced. ■ Stable water levels were essential to this subsistence system, but evidence from Lake Chichancanab in Yucatán shows that between A.D. 800 and A.D. 1000 this region suffered its driest period of climate in several thousand years. ■ We may expect that as a result water levels fell, and the raised fields in many areas became unusable. But the human response must be viewed through the lens of the social, political, and cultural circumstances. These exerted a powerful mediating effect on the way the Maya endeavored to cope with their difficulties. Had population levels been lower, the impact of the drought may not have been catastrophic, as it was, the Maya were already reaching the limits of the available subsistence capacity, and Mayan elites had espoused certain social and political agendas (including expensive warfare and competition with each other). It was against this specific background that a period of drought led quickly to crisis and collapse.

1. According to paragraph 1, ancient societies increased their agricultural output by
A. increasing the percentage of the population that worked as farmers
B. creating large irrigation systems
C. being highly selective of the fields they would farm
D. moving more people into the city to free up farmland

2. Which of the following can be inferred from paragraph 1 about the intensive agricultural methods of the Maya?
A. They helped the Maya overcome short-term fluctuations in the climate.
B. They could not supply all of the food required for the growth of Mayan cities.
C. They strained the environment more than the Maya's previous farming techniques did.
D. They were invented by the Maya to help them grow new kinds of crops.

3. The word "elaborately" in the passage is closest in meaning to
A. with great detail
B. artistically
C. mysteriously
D. gently hand-made

4. The word "abandoned" in the passage is closest in meaning to
A. carefully hidden
B. destroyed
C. enormous
D. no longer occupied

5. In paragraph 2, the author implies which of the following about the collapse of the Mayan city-states?
A. The fact that vegetation had grown over the ruins of Mayan buildings indicates that environmental degradation did not contribute to the Mayan collapse.
B. Early explorers supposed that there was a catastrophic collapse of the Mayan city states largely because this view fit their preconceived ideas about lost civilizations.

C. The condition of the tall pyramids and carved stones discovered by early explorers proves that Mayan city-states were violently overthrown.
D. The Mayan cities were abandoned because they became submerged in vegetation.

6. Why does the author include the information that Mayan cities had flourished for over 500 years and had frequently been at war with each other‖?
A. To identify a possible reason for the eventual collapse of Mayan society
B. To make the point that war and social unrest alone do not account for the Mayan collapse
C. To explain why recent studies argue that human actions were responsible for the Mayan collapse
D. To provide evidence that frequent wars weakened Mayan society only very gradually

7. According to paragraph 3, recent studies claim which of the following about the Mayan collapse?
A. It was caused primarily by frequent wars between rival city-states.
B. It was caused by a single, sudden event.
C. It was preceded by social unrest in northern city-states.
D. It began in southern city-states and spread to others.

8. All of the following are mentioned in paragraph 4 as possible direct or indirect causes of food shortages EXCEPT
A. increased monument construction
B. rivalries between states
C. deforestation and erosion
D. introduction of new crops

9. The word "entirely" in the passage is closest in meaning to
A. generally
B. clearly
C. completely
D. specifically

10. The word "intermittently" in the passage is closest in meaning to
A. constantly
B. periodically
C. usually
D. especially

11. According to paragraph 5, why did the raised fields in many areas become unusable?
A. The marshy depressions around the fields flooded in the rainy season.
B. Intensive cultivation of the fields drained the soil of nutrients.
C. The area where the fields were located experienced a drop in water levels.
D. Unstable design caused the failure of the drainage ditches.

12. According to paragraph 5, all of the following made it more difficult for theMaya to cope with the effects

of the drought EXCEPT
A. failure to properly cultivate the fields
B. high population levels
C. competition between Mayan groups
D. warfare

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

Nature apparently also contributed to the food shortages.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. The Mayan attempt to develop intensive agricultural methods to support large populations in relatively small areas probably was unsuccessful and could have caused the Mayan collapse.
B. The discovery of intact pyramids submerged in vegetation among the Mayan ruins led researchers to believe that Mayan cities were simply overgrown rather than catastrophically destroyed.
C. Warfare and rivalry between Mayan states may have caused food shortages that contributed to the eventual collapse of Mayan civilization.
D. Early theories that the Mayan collapse was a sudden, catastrophic event were followed by views that treated the collapse as a gradual process.
E. The continuing warfare and social unrest that started in the North and spread to the South provided researchers with evidence that the Mayan collapse took hundreds of years to occur.
F. Drought between A.D. 800 and A.D. 1000 likely caused the Mayan systems of intensive irrigated agriculture to fall, which could have brought about a rapid collapse of the Mayan states.

Passage 17

The Rise of Moscow

1 The rise of Moscow during medieval times was a fundamental development in Russian history. Moscow began with very little and for a long time could not be compared to such flourishing principalities as Novgorod or Galicia. Even in its own area, the northeast, it was junior to old centers like Rostov and Suzdal. In accounting for Moscow's rise, historians have emphasized several factors or rather groups of factors.

2 First, attention may be given to the doctrine of geographic causation. It stresses the decisive importance of the location on Moscow for the later expansion of the Muscovite state (the medieval state centered in Moscow) and includes several lines of argument. Moscow lay as a crossing of three roads. The most important was the way from the historically crucial city of Kiev and the declining south to the growing northeast. In fact Moscow has been described as the first stopping and setting point in the northeast. But it also profited from moments in other directions, including the reverse. Thus it seems immigrants came to Moscow after the Mongol devastation of the lands further to the northeast. Moscow was also situated on a bend of the Moscow River that flows from the northwest to the southeast into the Oka, the largest western tributary of the Volga River. To speak more broadly of water communications which span and unite European Russia, Moscow has the rare fortune of being located near the headwaters of four major rivers: the Oka, the Volga, the Don, and the Dnieper. This offered marvelous opportunities for expansion across the flowing plain, especially as there were no mountains or other natural obstacles to hem in the young principality.

3 In another sense too, Moscow benefited from a central position. It stood in the midst of lands inhabited by the Russian people which, so the argument runs, provided a proper setting for a natural growth in all directions. In fact some specialists have tried to estimate precisely how close to the geographic center of the Russian people Moscow was situated, noting also such circumstances as proximity to the land dividing the two main dialects of the Great Russian language. Central location within Russia, to make an additional point, cushioned Moscow from outside invaders. Thus, for example, it was the city of Novgorod, not Moscow, that continuously had to meet enemies from the northwest, while in the southeast Riazan absorbed the first blows from the direction. All in all, the considerable significance of the location on Moscow cannot be denied although this geographic factor has generally been assigned less relative weight by recent scholars.

4 The economic argument is linked in part to the geographic. ■ The Moscow River served as an important trade artery, and as the Muscovite principality expanded around its waterways, it profited by and in turn helped to promote increasing economic intercourse. ■ One school of thought has treated the expansion of Moscow largely in terms of the growth of a common market. ■ Another economic approach emphasizes the success of the Muscovite princes in developing agriculture in their domains and supporting colonization. ■ These princes clearly outdistance their rivals in obtaining peasants to settle on their lands. As a further advantage, they managed to maintain in their realm a relative peace and security highly

beneficial to economic life.

5 The last view introduces another key factor in explaining the Muscovite rise: the role of the rulers of Moscow. Moscow has generally been considered fortunate in its princes. Sheer luck constituted an important part of the picture. For several generations, the princes of Moscow had the advantage of male succession without interruption or conflict. In particular, for a long time the sons of the princes of Moscow were lucky not to have uncles competing for the Muscovite seat. When the classic power struggle between royal uncles and nephews finally erupted under Basil II(reigned 1425-1462), direct succession from father to son possessed sufficient standing and support in the principality of Moscow to overcome the challenge. The principality has also been considered fortunate because its early rulers, descending from the youngest son of Alexander Nevskii (1220?-1263) and thus representing a junior princely branch, found it expedient to devote themselves to their small holdings instead of neglecting them for more ambitious undertakings elsewhere.

1. The word "flourishing" in the passage is closest in meaning to

A. powerful
B. fortunate
C. neighboring
D. prosperous

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

A. principle
B. role
C. problem
D. power

3. Why does the author include the information that Moscow has been described as the first stopping and setting point in the northeast?

A. To explain why certain historically important areas near Moscow have fallen into a decline.
B. To show why Moscow attracted populations of immigrants from lines located further to the northeast.
C. To emphasize the importance of the location on Moscow in accounting for its growth.
D. To challenge the idea that immigrants to Moscow came from only one direction.

4. Which of the following can be inferred from paragraph 2 about residents of Moscow during medieval times?

A. Most retained strong cultural and economic ties to Kiev and the South.
B. Some were Mongols who came from areas northeast of Moscow.
C. Some had fled to Moscow to escape violent attacks from the northeast.
D. Most eventually moved on to other locations in the northeast.

5. According to paragraph 2, all of the following were true of Moscow **EXCEPT**

A. It was near several important waterways.
B. It was surrounded by open areas that were easily crossed.
C. It was located at a place where several travel routes came together.
D. It was protected from attack by its position in the bend of a river.

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

A. excluded
B. divided
C. distracted
D. protected

7. According to paragraph 3 specialists have tried to determine which of the following

A. Why Moscow seems to grow naturally in all directions
B. How close Moscow was to the geographic population center of the Russian people
C. Where the dividing line between the two major dialects of Great Russian was located
D. Which of the two major dialects of Great Russian was more commonly used

8. According to paragraph 3 which of the following best represents the view of recent scholars about the role of geography in Moscow's rise

A. Geography cannot account for many aspects of Moscow's rise.
B. The role of geography in Moscow's rise is still not fully understood.
C. Geography was important in Moscow's rise but not as important as early scholars thought it was.
D. Although geography played a role in Moscow's rise this role was fairly minor.

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

A. exchange
B. growth
C. influence
D. independence

10. Which of the following is mentioned in paragraph 4 as a factor in the economic success of the Muscovite principality?

A. improvements made to waterways used in trade
B. efforts of Muscovite princes to introduce new agricultural methods
C. conditions of comparative peace and security on Muscovite lands
D. groups of peasants setting land in other areas of Russia

11. According to paragraph 5 why has Moscow generally been considered fortunate in its princes

A. For a long period of time royal succession proceeded peacefully and without interruption from one generation to the next.
B. Through most of Moscow's history royal nephews were unable to take power away from each other.
C. In general Moscow's princes were almost always willing to share their power with their uncles.
D. Over the course of time the Muscovite rules of succession from father to son was relaxed considerably.

12. 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. It is fortunate that Moscow's early rulers were descended from an unambitious princely branch with small holdings.
B. Moscow benefited from its early rulers' desire to concentrate their energy on the care of their own small properties.
C. Moscow was fortunate in that it traced its rulers back to the youngest son of Alexander Nevskii.
D. Because most of Moscow's early rulers were junior princes their properties were fortunately relatively small and easy to care for.

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

Scholars have debated the relative importance of various economic factors in the principality's overall success.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Historians point to several factors to account for Moscow's rise during medieval times.

-
-
-

Answer Choices

A. Moscow was located near the geographic center of Russian-speaking peoples and was situated advantageously with respect to enemies, travel, and expansion.
B. Moscow expanded despite its early difficulty in its establishing command of its local waterways.
C. Moscow was politically stable because its early rulers generally succeeded each other steadily and without violence.
D. Moscow enjoyed numerous economic advantages due to expanding trade, successful farming and the relative absence of war.

E. Because some of Moscow's princes were descended from ancestors with relatively small holdings they were slow to improve life for the principality's residents.

F. Because its princes were deeply involved in economic activities such as agriculture and trade Moscow did not experience the power struggle that troubled other principalities.

Passage 18

Population Revolution in Eighteenth-Century Europe

1 In late seventeenth-century Europe, what had been evolution in population followed by stabilization changed to population revolution. ■ Increasing contacts with the Americas brought more sophisticated knowledge of the advantages of new foods, particularly the potato. ■ Originally a cool-weather mountain crop in the Americas, potatoes did well in the Pyrenees, Alps, and Scottish Highlands. ■ They also grew well in the long, damp springtime of the northwest European plain. ■ Whatever hesitancy peasants may have felt about eating potatoes quickly passed when famine threatened; after all, people who in famines desperately consumed grass, weeds, and the bark of trees hardly would have hesitated to eat a potato. By the later eighteenth and the nineteenth century, American foods had become the principal foodstuffs of many rural folk. Various agricultural publicists promoted adoption of these foods, and peasants found that potatoes could allow subsistence on smaller plots of land. Fried potatoes soon began to be sold on the streets of Paris in the 1680sthe original French fries. Governments, eager to promote population growth as a source of military and economic strength, also backed the potato.

2 Along with new foods, some landowners began to introduce other innovations. The nutritional base for a population revolution combined regional changes with the use of American foods. Dutch and English farmers drained more swamps and so increased cultivable land. Agricultural reformers further promoted the use of crops such as the turnip that return valuable nitrogen to the soil. Improvements in available tools, such as growing use of the scythe instead of the sickle for harvesting, and better methods of raising livestock also spread. All this took shape from the late seventeenth century onward, building on earlier agricultural changes. At the same time, rates of epidemic disease declined, in part because of more effective government controls over the passage of people and animals along traditional plague routes from the Middle East. It was the change in foods that really counted, however.

3 These developments provided a framework for an unprecedented surge. In virtually every area of Europe, the population increased by 50 to 100 percent in the eighteenth century, with the greatest growth coming after 1750. The Hapsburg Empire grew from 20 million to 27 million people; Spain rose from 5 million to 10 million, and Prussia rose from 3 million to 6 million. Growth would continue throughout the nineteenth century. In Europe as a whole, population rose from 188 million in 1800 to 401 million in 1900. This was an upheaval of truly impressive proportions.

4 The population explosion resulted from a break in the traditional, if approximate, balance between births and deaths in European society. In England between 1700 and 1750, approximately 32.8 people were born annually for every 1,000 inhabitants, and 31.5 people died. Similarly, in Lombardy in the eighteenth century, 39 people were born and 37 people died for every 1,000 inhabitants. Clearly, a major alteration had to occur in either the birth or the mortality rate before the expansion of population could begin. In fact, both rates changed: families began to have more children, and a lower percentage of the population died each year. Lower infant death rates meant more people living to produce children of their own, though falling adult death rates also increased the number of older Europeans.

5 While historians continue to debate the precise balance of causes involved in these dramatic changes, basic outlines are clear. Better food and a reduction in the epidemic-disease cycle allowed more children to live to adulthood, which increased the population directly and also provided more parents for the next generation a double impact. Rapidly increasing populations provided a new labor force for manufacturing. In the eighteenth century, this mainly involved hundreds of thousands of people, mostly rural, producing thread, cloth, and other products for market sale. This manufacturing expansion helped sustain the growing population, but it could also encourage a higher birth rate. Some people, able to earn money by their late teens, began to produce children earlier; the rate of illegitimate births went up. Others realized that having an extra child or two might help the family economy by providing additional worker-assistants. While death-rate decline was the most important source of Europe's population explosion, various changes on the birth rate side, though quite short-lived, pushed the population up as well.

1. Paragraph 1 suggests that the European population before the late seventeenth century had been
A. growing slowly and then not at all
B. changing in distribution but not in the overall number of people
C. decreasing at a small but stable rate
D. alternating between periods of slow and fast growth

2. The word “sophisticated” in the passage is closest in meaning to
A. quickly obtained
B. highly developed
C. widely distributed
D. easily understood

3. 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 constant threat of famine caused peasants to become desperate and eat unusual foods like grass, weeds, and the bark of trees.
B. Because famine forces people to eat foods they normally would not want to eat, peasants were willing to eat potatoes.
C. Although some people ate foods like potatoes during famine, others preferred to eat easily accessible foods like grass, weeds, and the bark of trees.
D. Famine had the greatest impact on peasants, whose regular diet of potatoes expanded to include other vegetation.

4. According to paragraph 1, all of the following contributed to the widespread adoption of the potato in Europe EXCEPT:
A. Peasants growing potatoes for their own use could support themselves on smaller plots of land.
B. Potatoes grew well in a variety of locations in Europe.
C. Potatoes were the preferred food of European military forces.
D. Agricultural publicists encouraged the public to eat potatoes.

5. According to paragraph 2, regional farmers did all of the following to improve food production in Europe EXCEPT:
A. They improved the way they raised farm animals.
B. They used both the sickle and the scythe to harvest crops.
C. They grew special crops that nourished the soil.
D. They created more farmland by draining swamps.

6. The word "surge" in the passage is closest in meaning to
A. event
B. benefit
C. sudden increase
D. important change

7. In paragraph 3, the author mentions the Hapsburg Empire, Spain, and Prussia in order to
A. support the claim that the population explosion covered most of the European continent
B. give examples of population growth during the nineteenth century
C. suggest that the population of Prussia grew more slowly than the populations of other countries
D. demonstrate that the fastest population growth took place in Spain

8. The word "proportions" in the passage is closest in meaning to
A. origins
B. consequences
C. growth
D. size

9. According to paragraph 4, the expansion of Europe's population was made possible by
A. a major improvement in the care of older Europeans
B. increased variation in the ages at which people gave birth to children
C. a change in traditional beliefs about family size
D. increased birth rates accompanied by a decline in mortality

10. The word "sustain" in the passage is closest in meaning to
A. support
B. stimulate
C. explain
D. unite

11. According to paragraph 5, what effect did the epidemic-disease cycle have on population during the eighteenth century
A. Childhood diseases kept population growth rates from rising even higher.
B. Periodic epidemics caused population growth rates to rise and fall in cycles.
C. The effect varied by area, with urban populations more affected by disease than rural areas.
D. Fewer childhood deaths from disease led to an increased number of children in the current and future

generations.

12. According to paragraph 5, how did the manufacturing expansion affect population growth
A. It caused a small decline, because families working in manufacturing needed fewer children as worker-assistants than did farming families.
B. It made teenage workers delay childbearing, which caused a decline in population growth.
C. It caused an increase in population by allowing workers to support a family at an earlier age.
D. It caused the growth rate to rise in the cities and to decline in rural areas.

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

What were the factors that led to this population revolution?

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Climate conditions in Europe allowed for the introduction of new crops that competed with American foods for popular consumption.
B. An important cause of population growth was improved nutrition, due in large part to the addition of the potato and other American foods to the standard European diet.
C. Regional landowners developed improved agricultural techniques, and mortality rates declined as governments gained control over traditional plague routes.
D. Growth rates varied widely across the continent but were highest in France, Spain, and Britain and lowest in Prussia and the Hapsburg Empire.
E. Birth rates went up as more people lived long enough to have their own children, had children earlier, and had larger families.
F. Government policies promoting population growth helped to create a large labor force for the manufacturing industry.

Passage 19

Europe in the High Middle Ages

1 For 500 years after the fall of the Western Roman Empire in 476 A.D., a period known as the early Middle Ages, Europe endured an age of political instability, economic decline, and reduced population. But as the millennium approached, the situation began to improve. Toward the end of the tenth century, an increase in the amount of crop-producing land was accompanied by an increase in population, with the potential for that number to rise even higher. The increase in agricultural production came about as a result of a combination of factors, the most prominent of which were changing methods of field management and improvements in agricultural technology.

2 For much of the early Middle Ages, peasants continued the Roman practice of dividing their fields in two leaving one fallow, or uncultivated, for a year, and planting their crops in the other half. Fallow land restored its nutrients, but the practice meant that half the land produced nothing every year. In southern Europe with its drier climate this system of two-field crop rotation continued, but in northern Europe, peasants improved on this system by dividing their land into three parts. One they left fallow, another they planted in the spring, and the third they planted with winter crops. This three-field crop rotation, dependent on more rainfall than southern Europe received, meant that two-thirds instead of one-half of a peasant's land was under production in one year.

3 Related to the changes in crop rotation were improvements in plows and animal harnessing. More land under cultivation spurred experimentation in the construction of plows. Peasants attached wheels to their plows, which made it easier for oxen to pull them through the heavier, wetter soil of northern Europe, and made it possible for a plow to move more quickly down a row provided it had a speedy animal pulling it.

4 Oxen are slow and unintelligent compared to horses, but peasants could not use horses to pull plows until they devised a different kind of harnessing than the strap that circled an ox's neck. ■ With a harness resting on its shoulders instead of its neck, a horse could be used to plow, and horses could walk more quickly and work longer hours than oxen. ■ They also required less guidance, since they understood verbal signals to turn or to stop. ■ Heavier, wheeled plows pulled by suitably harnessed horses meant that peasants could work more land in a day than ever before. ■ Whether an increase in population across Western Europe, but particularly in the north, stimulated innovations or whether such innovations contributed to a rise in population, the cumulative effect of these changes in agriculture was apparent in the tenth century. Conditions in Europe were ripe for an economic and cultural upswing.

5 Even before trade with the eastern Mediterranean increased starting in the twelfth century, trade and towns were on the rise. Travel was still dangerous, but merchants were willing to risk transporting goods over long distances. By the late thirteenth century, a few merchants from Italy had even reached China. Greater surpluses in crops meant people had more to sell at market. More people and goods led to regularly held markets in the most populated location in a region. It would be impossible to say whether trade gave rise

to towns or vice versa. What is clear is that each fostered the other in conditions of greater social stability.

6 Travel on trade routes increased, and some towns sprang up to provide rest and refreshment to traders. The distance between towns often corresponded to the distance that traders could cover in a day. Merchants kept their eyes open for customers with money to spend. The residences of kings, nobles, and powerful officials became sites of markets for local and long-distance traders. In Champagne, in northeastern France, six large annual markets attracted merchants from all over Europe in the twelfth century. Their different currencies prompted the first development of banking techniques. With the use of coins now the norm, money changers daily posted changing exchange rates so that merchants would know the worth of their coins in relation to the worth of other merchants' coins. By 1300, trade had transformed life for the better throughout Western Europe.

1. Paragraph 2 suggests that the land-management practices developed in the north could not have been adopted in southern Europe because
A. the southern climate was too dry
B. southern farmers were too strongly tied to traditional Roman farming practices
C. the new practice would have required much additional farmland, which was lacking in the south
D. southern farmers had already developed a new crop-rotation system

2. 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. Peasants had to attach wheels to their plows to make it possible for their oxen to plow the heavy, wet soil of northern Europe.
B. With speedy oxen pulling the plow, peasants were able to plow the heavy soil of northern Europe.
C. Adding wheels to a plow made plowing the heavy soil of northern Europe much easier and potentially faster.
D. Attaching wheels to a plow made it necessary to use speedier animals.

3. According to paragraph 4, what initially kept farmers from using horses to pull their plows
A. Horses moved too quickly for traditional farm work.
B. Farmers did not have access to many horses.
C. Horses were thought to be too weak to pull plows.
D. The traditional harness was unsuitable for horses.

4. According to paragraph 4, farmers found horses to be better than oxen for pulling plows for all of the following reasons EXCEPT:
A. Horses are smarter than oxen.
B. Horses can pull plows faster.
C. Horses are able to plow for longer periods of time.
D. Horses do not need verbal signals to turn and stop.

5. The word “cumulative” in the passage is closest in meaning to
A. eventual

B. positive
C. combined
D. practical

6. The word “apparent” in the passage is closest in meaning to
A. welcome
B. noticeable
C. predictable
D. widespread

7. The word “each” in the passage refers to which of the following
A. people and goods
B. crop surpluses and markets
C. trade and towns
D. merchants from Italy and merchants from China

8. In paragraph 5, why does the author state that a few Italian merchants had reached China
A. To emphasize how much farther European merchants traveled during this time period than in previous centuries
B. To support the idea that Chinese goods were important for European merchants
C. To show how European merchants influenced Chinese markets
D. To indicate the wide-ranging tastes of European consumers during the thirteenth century

9. The phrase “corresponded to” in the passage is closest in meaning to
A. approached
B. equaled
C. exceeded
D. determined

10. Paragraph 6 suggests that markets developed near the residences of kings, nobles, and powerful officials for which of the following reasons
A. Nobles and officials made it legal for merchants to sell their goods.
B. Merchants could sell their goods in relative safety at these sites.
C. Nobles and officials established their residences along traditional trade routes.
D. Merchants could sell their goods more easily to wealthy nobles and officials.

11. The phrase “the norm” in the passage is closest in meaning to
A. acceptable
B. desirable
C. common
D. available

12. According to paragraph 6, what led to the development of the first banking techniques

A. Merchants from different European regions needed to compare the value of their currency at large markets.
B. Merchants participating in large markets wanted a place to safely store the money they made from their sales.
C. Organizers of large markets developed methods for determining the value of goods from long-distance traders.
D. Merchants needed to borrow money to buy the goods of other merchants at large markets.

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

A stronger part of the body had to bear the strain of pulling for the horse to become a useful farm animal.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. Peasants in southern Europe developed a three-field system of crop rotation that was based on agricultural practices used by Roman farmers.
B. By rotating their land, using three fields rather than the traditional two, many northern farmers were able to harvest twice during the year, significantly increasing their annual production.
C. Agricultural innovations led to population growth everywhere in Europe, and the resulting towns were the reason that trade increased.
D. By using wheeled plows and replacing horses with oxen, farmers could plow the soil of Northern Europe more quickly, contributing to economic improvements.
E. As European town markets expanded to become trade centers selling goods from distant locations, the social and economic power of merchants increased.
F. A growing system of trade that included long-distance merchants and large annual markets contributed to innovations in economic practice and the flourishing of town culture.

Passage 20

Agriculture in the Late Ottoman Empire

1 Throughout its history, agriculture was the economic mainstay of the Ottoman Empire, which dominated North Africa, the Middle East, Turkey, and southeastern Europe for over 600 years until the early twentieth century. Most cultivators possessed small landholdings, engaging in a host of tasks, with their crops and animal products mainly dedicated to self-consumption. But enormous changes over time prevailed in the agrarian sector. Beginning in the late eighteenth century, agriculture became more and more commercialized, with increasing amounts of produce going to sale to domestic and international consumers.

2 At least three major engines increased this agricultural production devoted to the market, the first being rising demand, both international and domestic. Abroad, especially after 1840, the living standards and buying power of many Europeans improved substantially, permitting them to buy a wider choice and quantity of goods. Rising domestic markets within the empire were also important, thanks to increased urbanization as well as mounting personal consumption. In the late nineteenth century, newly opened railroad districts brought a flow of domestic wheat and other cereals to major coastal cities. Railroads also attracted market gardeners who now could grow and ship fruits and vegetables to the expanding and newly accessible markets of these cities.

3 The second engine driving agricultural output concerns cultivators' increasing payment of their taxes in cash rather than in kind (that is, in agricultural or other products). Some historians have asserted that the increasing commitment to market agriculture was a product both of a mounting per capita tax burden and the state's growing preference for tax payments in cash rather than in kind. In this view, such government decisions forced cultivators to grow crops for sale in order to pay their taxes. Thus, state policy is seen as the most important factor influencing the cultivators' shift from subsistence farming to market agriculture.

4 However, cultivators' rising involvement in the market was not simply a reactive response to the state's demands for cash taxes; other factors were at work. There was a third engine driving increased agricultural production cultivators' own desires for consumer goods. Among Ottoman consumers, increasingly frequent changes in taste, along with the rising availability of cheap imported goods, stimulated a rising consumption of goods. This pattern of rising consumption began in the eighteenth century, as seen by the urban phenomenon of the Tulip Period (1718¨C1730) a time of urban revival and orientation toward the Westland accelerated subsequently. Wanting more consumer goods, cultivators needed more cash. Thus, rural families worked harder than they had previously, not merely because of cash taxes. In such circumstances, leisure time diminished, cash incomes rose, and the flow of consumer goods into the countryside accelerated.

5 Increases in agricultural production both promoted and accompanied a vast expansion of the area of land under cultivation. At the beginning of the eighteenth century and indeed until the end of the empire, there

remained vast stretches of uncultivated, sometimes nearly empty, land on every side. These spaces began to fill in, a process finally completed only in the 1950s in most areas of the former empire. Many factors were involved. In many cases, families increased the amount of time at work, bringing into cultivation uncultivated land already under their control. They also engaged in share cropping agreeing to work another's land and paying that person a share of the output. Often such acreage had been pastureland for animals but now was given over to crop production. The extraordinarily fertile lands of Moldavia and Wallachia (modern Romania), for example, had been among the least populated lands of the Ottoman empire in the eighteenth century, but now saw large amounts of land brought under the plow. Significant concentrations of commercial agriculture first formed in areas easily accessible by water, such as the Danube River basin. During the nineteenth century, expansion in such areas continued, and interior regions joined the list as well.

6 ■ There were also some increases in productivity. ■ Irrigation projects, one form of intensive agriculture, developed in some areas, and the use of modern agricultural tools increased. ■ But more intensive exploitation of existing resources remained comparatively unusual, and most increases in production derived from placing additional land under cultivation. ■

1. According to paragraph 1, in which of the following ways did agricultural production in the Ottoman Empire begin to change at end of the eighteenth century
A. Agricultural products no longer contributed as much to the Ottoman economy.
B. Agricultural workers left their farms to work in commercial industries in the cities.
C. Farmers with small landholdings began to focus on a single task rather than on many tasks.
D. Farm products were sold commercially instead of being kept for personal use.

2. The word “substantially” in the passage is closest in meaning to
A. without interruption
B. significantly
C. rapidly
D. unexpectedly

3. The word “accessible” in the passage is closest in meaning to
A. profitable
B. competitive
C. created
D. reachable

4. According to paragraph 2, all of the following contributed to a rising demand for the agricultural products of the Ottoman Empire during the nineteenth century EXCEPT
A. the sale of domestic wheat in place of other cereals in coastal cities
B. the development of railroad systems leading to coastal cities
C. the rise in living standards and buying power among Europeans
D. the emergence of new domestic markets in the Ottoman Empire

5. 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 historians have asserted that the increasing commitment to market agriculture allowed the government to raise taxes and have them paid in cash.
B. The government raised taxes and required they be paid in cash, so farmers had to use the cash they obtained from selling their farm products in the market to pay their taxes
C. Some historians have asserted that the increasing commitment to market agriculture was a product of the state's growing preference for tax payments in cash rather than kind.
D. According to some historians, the growth of market agriculture was the result of mounting taxes which the government wanted individuals to pay in cash.

6. Which of the following best represents the explanation for the change in agricultural production mentioned in paragraph 3
A. The state allowed cultivators to pay their taxes in crops as well as in cash.
B. Cultivators needed crops they could sell to pay taxes in cash.
C. State policies began favoring farmers who shifted to market agriculture by lowering those farmers' taxes.
D. Cultivators had more money to invest in crops because of a lower tax burden.

7. The word “stimulated” in the passage is closest in meaning to
A. encouraged
B. followed
C. suggested
D. demonstrated

8. According to paragraph 4, the increasing desire of Ottoman cultivators to purchase consumer goods led to all of the following changes EXCEPT:
A. Cultivators worked harder and for longer hours.
B. Cultivators had less cash available to use for tax payments.
C. Cultivators succeeded in increasing the amount of cash income they earned.
D. More consumer goods became available in rural areas.

9. The word “engaged” in the passage is closest in meaning to
A. succeeded
B. believed
C. invested
D. participated

10. The word “exploitation” in the passage is closest in meaning to
A. improvement
B. use
C. management
D. investigation

11. According to paragraph 5, which of the following was true of the process of bringing new land under cultivation
A. It began in interior areas and quickly spread to areas near water.
B. It was completed near the end of the eighteenth century.
C. It occurred slowly because most uncultivated land was not very fertile.
D. It often occurred as a result of farming families working longer hours.

12. What can be inferred from paragraph 5&6 about agricultural production during the nineteenth century
A. Irrigation and the use of modern tools contributed little to increased production in comparison with other factors.
B. Interior regions increased their agricultural production much more than regions near river basins did.
C. Agricultural production was aided by using less-productive land for animal pasture instead of for growing crops.
D. Agricultural production increased in some areas but decreased in others during the nineteenth century.

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

These increases resulted from using technology to improve yields on existing farmland, a system known as intensive agriculture.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Until the late eighteenth century, farmers were limited to selling their crops and animal products for cash in nearby towns.
B. Starting in the late eighteenth century, farmers increasingly produced crops for sale in domestic and international markets.
C. Many farmers sold their products in order to be able to pay their taxes in cash and buy consumer goods for themselves.
D. Railroads changed the way farming was done, since they brought modern tools from towns to the agricultural areas.
E. Increased productivity resulted more from the cultivation of additional land than from the use of new tools and intensive agricultural processes.
F. Farming was concentrated in river basins throughout the nineteenth century, while interior areas were devoted to pastureland for animals.

Passage 21

Water Management in Early Agriculture

1 As the first cities formed in Mesopotamia in the Middle East, probably around 3000 B.C., it became necessarily to provide food for larger populations, and thus to find ways of increasing agricultural production. This, in turn, led to the problem of obtaining sufficient water.

2 Irrigation must have started on a small scale with rather simple constructions, but as its value became apparent, more effort was invested in new construction to divert more water into the canals and to extend the canal system to reach greater areas of potential farmland. Because of changing water levels and clogging by waterborne particles, canals and their intakes required additional labor to maintain, besides the normal labor required to guide water from field to field. Beyond this, some personnel had to be devoted to making decisions about the allocation of available water among the users and ensuring that these directions were carried out. With irrigation water also came potential problems, the most obvious being the susceptibility of low-lying farmlands to disastrous flooding and the longer-term problem of salinization (elevated levels of salt in the soil). To combat flooding from rivers, people from early historic times until today have constructed protective levees (raised barriers of earth) between the river and the settlement or fields to be protected. This, of course, is effective up to a certain level of flooding but changes the basic water patterns of the area and can multiply the damage when the flood level exceeds the height of the levee.

3 Salinization is caused by an accumulation of salt in the soil near its surface. ■ This salt is carried by river water from the sedimentary rocks in the mountains and deposited on the Mesopotamian fields during natural flooding or purposeful irrigation. Evaporation of water sitting on the surface in hot climates is rapid, concentrating the salts in the remaining water that then descends through the soil to the underlying water table. ■ In southern Mesopotamia, for example, the natural water table comes to within roughly six feet of the surface. ■ Conditions of excessive irrigation bring the water table to eighteen inches, and water can rise further to the root zone, where the high concentration of salts would kill most plants. ■

4 Solutions for salinization were not as straightforward as for flooding, but even in ancient times it was understood that the deleterious effects of salinization could be minimized by removing harmful elements through leaching the fields with additional fresh water, digging deep wells to lower the water table, or instituting a system of leaving fields uncultivated. The first two cures would have required considerable labor, and the third solution would have led to diminished productivity, not often viewed as a likely decision in periods of growing population. An effective irrigation system laid the foundation for many of the world's early civilizations, but it also required a great deal of labor input.

5 Growing agrarian societies often tried to meet their food-producing needs by farming less-desirable hill slopes surrounding the favored low-lying valley bottoms. Since bringing irrigation water to a hill slope is

usually impractical, the key is effective utilization of rainfall. Rainfall either soaks into the soil or runs off of it due to gravity. A soil that is deep, well-structured, and covered by protective vegetation and much will normally absorb almost all of the rain that falls on it, provided that the slope is not too steep. However, soils that have lost their vegetative cover and surface mulch will absorb much less, with almost half the water being carried away by runoff in more extreme conditions. This runoff carries with it topsoil particles, nutrients, and humus (decayed vegetable matter) that are concentrated in the topsoil. The loss of this material reduces the thickness of the rooting zone and its capacity to absorb moisture for crop needs.

6 The most direct solution to this problem of slope runoff was to lay lines of stones along the contours of the slope and hence, perpendicular to the probable flow of water and sediment. These stones could then act as small dams, slowing the downhill flow of water and allowing more water to infiltrate and soil particles to collect behind the dam. This provided a buildup of sediments for plants and improved the landscape's water-retention properties.

1. All of the following are mentioned in paragraph 2 as operations involved in the Mesopotamian irrigation system EXCEPT
A. determining how much irrigation water should be distributed to various farmers
B. widening existing canals so they could hold more water
C. removing undesirable materials from the intakes of irrigation canals
D. building new canals so irrigation water could be transported to distant areas

2. According to paragraph 2, protective levees can have which of the following disadvantages?
A. They can greatly increase the destruction caused by floodwaters when floodwaters are higher than the levee.
B. They can fail even when the flood level remains below the height of the levee.
C. They can lead over time to a serious salinization problem.
D. They can cause damaging floods to occur more frequently by changing basic water patterns.

3. Paragraph 2 suggests that irrigation increased the likelihood of destructive floods because
A. irrigated fields were often in locations that tended to flood naturally
B. the canal intakes for irrigation water often did not work
C. most irrigation canals were too narrow and thus overflowed
D. levees built to protect irrigation systems required maintenance

4. The word "potential" in the passage is closet in meaning to
A. serious
B. basic
C. new
D. possible

5. The word "accumulation" in the passage is closet in meaning to
A. distribution
B. mixture

C. buildup
D. exchange

6. According to paragraph 3, excessive irrigation can destroy crops by
A. raising salty water to the level of the roots
B. forcing the roots of plants to grow close to the surface
C. taking the place of some natural flooding
D. creating salt deposits on the surface of the soil

7. The word "straightforward" in the passage is closet in meaning to
A. successful
B. simple
C. common
D. complex

8. According to paragraph 4, which of the following is true of the more-likely-used solutions to the problem of salinization?
A. They resulted in a decrease in the amount of food that was produced.
B. They succeeded only on areas where the natural water table was especially low.
C. They often demanded much time and effort on the part of their users.
D. They often led to other technological advances.

9. According to paragraph 5, which of the following was the main challenge faced by early agricultural societies that wanted to grow crops on hill slopes?
A. Getting enough irrigation water to the hill slope
B. Growing crops without disturbing the natural vegetative cover
C. Retaining rainwater and thus preventing excessive runoff
D. Identifying crops that do not need a thick rooting zone

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. However, soils that are unable to absorb much water experience massive runoff during heavy rains.
B. However, where neither protective vegetation nor mulch covers the soil, much rainwater can be lost to runoff.
C. However, on extremely steep slopes there is no vegetative cover or mulch to prevent runoff.
D. However, in more extreme conditions water that runs off can carry away the vegetative cover and the surface mulch

11. The word "impractical" in the passage is closet in meaning to
A. unnecessary
B. unsafe
C. unrealistic
D. unpredictable

12. Which of the following best describes how paragraph 6 relates to paragraph 5?

A. Paragraph 6 describes how the solution to a problem identified in paragraph 5 created unexpected benefits.
B. Paragraph 6 compares two possible solutions to a problem described in paragraph 5.
C. Paragraph 6 explains how the attempt to solve a problem introduced in paragraph 5 led to more difficult problems.
D. Paragraph 6 explains one way in which a difficulty described in paragraph 5 was resolved.

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

Natural flooding, however, does not raise the water table nearly as much and thus does not have these sorts of consequences.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.

Answer Choices

A. Early on, irrigation was recognized as a valuable practice, even though it was labor-intensive and brought with it problems of salinization and damaging floods.
B. Levees were the major means of protection against flooding, while leaching with added water and lowering the water table helped to control salinization.
C. Because of the enormous amount of labor involved in irrigating fields, farming was increasingly moved to hill slopes, where irrigation systems required less labor.
D. The mountain water that was used to irrigate farmland in Mesopotamia was exceptionally high in salt, causing rapid salinization of the soil.
E. The practice of leaving fields uncultivated periodically was used primarily by societies lacking a large labor force.
F. As cultivation was extended to hill slopes, methods were developed to better retain water from rainfall for crops growing on hillsides.

Passage 22

Extinctions at the End of the Cretaceous

1 It has long been recognized that the dinosaurs disappeared from the fossil record at the end of the Cretaceous period (65 million years ago), and as more knowledge has been gained, we have learned that many other organisms disappeared at about the same time. The microscopic plankton (free-floating plants and animals) with calcareous shells suffered massively. The foundation of the major marine food chain that led from the minute plankton to shelled animals to large marine reptiles had collapsed.

2 On land it was not only the large animals that became extinct. The mammals, most of which were small, lost some 35 percent of their species worldwide. Plants were also affected. For example, in North America 79 percent did not survive, and it has been noted that the survivors were often deciduous they could lose their leaves and shut down while others could survive as seeds. As in the sea, it seems that on the land one key food chain collapsed: the one with leaves as its basic raw material. These leaves were the food of some of the mammals and of the herbivorous dinosaurs, which in turn were fed on by the carnivorous dinosaurs. Furthermore, it is most likely that these large dinosaurs had slow rates of reproduction, which always increases the risk of extinction. Crocodiles, tortoises, birds, and insects seem to have been little affected. The two first named are known to be able to survive for long periods without food, and both can be scavengers (feed on dead material). Indeed, with the deaths of so many other animals and with much dead plant material, the food chain based on detritus would have been well-supplied. Many insects feed on dead material; furthermore, most have at least one resting stage in which they are very resistant to damage. In unfavorable conditions some may take a long time to develop: there is a record of a beetle larva living in dead wood for over 40 years before becoming an adult. Some birds were scavengers, but the survival of many lineages is a puzzle.

3 What happened in the biological story just after these extinctions what is found in and just above the boundary layer between the deposits of the Cretaceous and those of the Tertiary (65¨C2.6 million years ago), termed the K/T boundary? For a very short period the dominant microorganisms in marine deposits were usually diatoms and dinoflagellates (both single-celled types of plankton). The important feature for the survival of both these groups was the ability to form protective cysts (sacs around organisms) that rested on the sea floor. Above these, in the later deposits, are the remains of other minute plankton, but the types are quite different from those of the Late Cretaceous. In terrestrial deposits a sudden and dramatic increase in fern plant spores marks the boundary in many parts of the world; ferns are early colonizers of barren landscapes. The fern spike (sudden increase), as it is termed, has been found also in some marine deposits (such was the abundance of fern spores blown around the world), and it occurs in exactly the same layer of deposit where the plankton disappear. We can conclude that the major marine and terrestrial events occurred simultaneously.

4 Many theories have been put forward for the extinction of the dinosaurs, but most of them can be dismissed. Since 1980 there have been more focused, but still controversy-ridden, investigations. In that

year Louis and Walter Alvarez and colleagues from the University of California published their research on the amounts of various metals in the boundary between Cretaceous and Tertiary rocks (K/T boundary) in Italy, Denmark, and New Zealand. They had found, accidentally, that a rare metal, iridium, suddenly became very abundant exactly at the boundary and then slowly fell away. This phenomenon, known as the iridium spike, has now been identified in K/T boundary deposits in over a hundred other sites in the world. Iridium occurs in meteorites and volcanic material, but in the latter case it is accompanied by elevated levels of nickel and chromium. These other metals are not especially abundant at the K/T boundary. The Alvarezes concluded that the iridium spike was due to a large asteroid that struck Earth 65 million years ago.

1. The word "recognized" in the passage is closest in meaning to
A. suspected
B. argued
C. assumed
D. accepted

2. According to paragraph 1, which of the following was true of small planktonic organisms at the end of the Cretaceous
A. They lost their main sources of food.
B. They developed calcareous shells.
C. They decreased greatly in number as did many other types of organisms.
D. They replaced other minute organisms as a food source in the major marine food chain.

3. Which of the following statements is NOT supported by the information provided in paragraph 2 about extinctions at the end of the Cretaceous
A. About 35 percent of mammal species were lost.
B. 79 percent of North American plants disappeared.
C. Most birds, tortoises, and crocodiles escaped extinction.
D. Deciduous trees were especially likely to go extinct.

4. According to paragraph 2, which of the following factors probably contributed to the extinction of the dinosaurs
A. The length of time it took dinosaurs to reproduce
B. Large quantities of dead material disturbing their habitats
C. Increased competition for food from scavengers
D. An increase in carnivore populations

5. In paragraph 2, why does the author provide the information that there is a record of a beetle larva living in dead wood for over 40 years before becoming an adult
A. To help explain why insects were less likely to go extinct than other species
B. To show that not all species that relied on trees disappeared during the late Cretaceous
C. To suggest that insects that lived long ago had much longer life spans than those living today
D. To support the claim that conditions at the end of the Cretaceous were highly unfavorable

6. The word “simultaneously” in the passage is closest in meaning to
A. rapidly
B. repeatedly
C. at the same time
D. for different reasons

7. According to paragraph 3, which of the following is true of plankton after the extinctions at the end of the Cretaceous
A. Diatoms and dinoflagellates suddenly became very rare.
B. Single-celled types of plankton were replaced by more complicated microorganisms.
C. The plankton found in later deposits are closely related to single-celled Late Cretaceous microorganisms.
D. The only types of Late Cretaceous plankton to survive extinction were those protected by cysts.

8. 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 fern spike is the term given to this sudden increase in the abundance of fern spores blown into the oceans around the world.
B. The sudden increase in fern spores occurred in exactly the same parts of the world where the plankton was disappearing.
C. Fern spores have even been found in some marine deposits from exactly the same layer as that showing the disappearance of the plankton.
D. Most marine deposits from around the world contain either plankton or a lot of fern spores but not both together in the same layer.

9. The word “dismissed” in the passage is closest in meaning to
A. further explored
B. rejected
C. completely revised
D. replaced

10. The word “elevated” in the passage is closest in meaning to
A. high
B. varying
C. unusual
D. adequate

11. According to paragraph 4, what evidence is there that an asteroid hit Earth
A. The fact that the metals nickel and chromium were found at sites around the world
B. The presence in K/T boundary deposits of large amounts of a metal that is found in meteorites
C. The fact that iridium amounts decreased at the same time that the Cretaceous ended and the Tertiary began
D. The differences in the types of metals found in deposits in Italy, Denmark, and New Zealand

12. Paragraph 4 suggests which of the following about the Alvarezes' theory
A. Their theory was accepted until 1980, when more focused investigations showed it to be incorrect.
B. It rules out the possibility that the iridium spike was the result of volcanic activity.
C. Before it can be accepted, more evidence must be gathered from locations outside Europe and New Zealand.
D. Experts believe the research done by the Alvarezes was too broad.

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

This change in plankton found in marine deposits is what marks the boundary between the Cretaceous and the Tertiary.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text. Answer Choices

A. Aside from the dinosaurs, most of the organisms affected were very small, such as single-celled plankton and insects.
B. Herbivores and carnivores were both affected, but the hardest-hit group was the scavengers, including many birds and some mammals.
C. Two major food chains were eliminated, one in the oceans based on plankton, and one on land based on leaves.
D. Examinations of marine and terrestrial deposits show clearly that ocean extinctions occurred well before those on land.
E. In geological samples from around the world, the K/T boundary is marked by a sudden change in plankton and by a spike in fern spores.
F. Sudden, high levels of iridium found at the K/T boundary suggest that a meteorite might have caused the extinctions.

Passage 23

Pleistocene Extinctions

1 At the end of the Pleistocene (roughly 11,500 years ago), many large mammals became extinct. Large mammals in the Americas and Australia were particularly hard-hit. In Australia, 15 of the continent's 16 of large mammals died out; North America lost 33 of 45 genera of large mammals, and in South America 46 of 58 such genera went extinct. In contrast, Europe lost only 7 of 23 such genera, and in Africa south of the Sahara only 2 of 44 died out. What caused these extinctions? Why did these extinctions eliminate mostly large mammals? Why were the extinctions most severe in Australia and the America? No completely satisfactory explanation exists, but two competing hypotheses are currently being debated. One holds that rapid climatic changes at the end of the Pleistocene caused extinctions, whereas another, called prehistoric overkill, holds that human hunters were responsible.

2 Rapid changes in climate and vegetation occurred over much of Earth's surface during the late Pleistocene, as glaciers began retreating. The North American and northern Eurasian open steppe tundras (treeless and permanently frozen land areas) were replaced by conifer and broadleaf forests as warmer and wetter conditions prevailed. The Arctic region changed from a productive herbaceous one that supported a variety of large mammals, to a relatively barren waterlogged tundra that supported a far sparser fauna. The southwestern United States region also changed from a moist area with numerous lakes, where saber-tooth cats, giant ground sloths, and mammoths roamed, to a semiarid environment unable to support a diverse fauna of large mammals.

3 Rapid changes in climate and vegetation can certainly affect animal populations, but the climate hypothesis presents several problems. First, why did the large mammals not migrate to more suitable habitats as the climate and vegetation changed. After all, many other animal species did. For example, reindeer and the arctic fox lived in southern France during the last glaciation and migrated to the Arctic when the climate became warmer.

4 The second argument against the climatic hypothesis is the apparent lack of correlation between extinctions and the earlier glacial advances and retreats throughout the Pleistocene Epoch. Previous changes in climate were not marked by episodes of mass extinctions.

5 Proponents of the prehistoric overkill hypothesis argue that the mass extinctions in North and South America and Australia coincided closely with the arrival of humans. Perhaps hunters had a tremendous impact on the faunas of North and South America about 11,000 years ago because the animals had no previous experience with humans. The same thing happened much earlier in Australia soon after people arrived about 40,000 years ago. No large-scale extinctions occurred in Africa and most of Europe because animals in those regions had long been familiar with humans.

6 One problem with the prehistoric overkill hypothesis is that archaeological evidence indicates the early

human inhabitants of North and South America, as well as Australia, probably lived in small, scattered communities, gathering food and hunting. How could a few hunters destroy so many species of large mammals. However, it is true that humans have caused major extinctions on oceanic islands. For example, in a period of about 600 years after arriving in New Zealand, humans exterminated several species of the large, flightless birds called moas. ■ A second problem is that present-day hunters concentrate on smaller, abundant, and less dangerous animals. ■ The remains of horses, reindeer, and other small animals are found in many prehistoric sites in Europe, whereas mammoth and woolly rhinoceros remains are scarce. ■ Finally, few human artifacts are found among the remains of extinct animals in North and South America, and there is usually little evidence that the animals were hunted. Countering this argument is the assertion that the impact on the previously unhunted fauna was so swift as to leave little evidence. ■

7 The reason for the extinctions of large Pleistocene mammals is still unresolved and probably will be for some time. It may turn out that the extinctions resulted from a combination of different circumstances. Populations that were already under stress from climate changes were perhaps more vulnerable to hunting, especially if smaller females and young animals were the preferred targets.

1. According to paragraph 1, which of the following groups of mammals experienced a high extinction rate at the end of the Pleistocene
A. Large mammals living in North America
B. Small mammals living in South America
C. Large mammals living in South Africa
D. Large mammals living in Europe

2. According to paragraph 1, researchers have been able to answer which of the following questions about late Pleistocene extinctions
A. Why did some parts of the world experience more extinctions than others
B. Which parts of the world experienced the greatest number of extinctions
C. Did the large mammals of the Americas or Australia become extinct first
D. How rapidly did the climate change during the extinctions

3. What can be inferred from paragraph 1 about the extinctions that occurred at the end of the Pleistocene
A. They were caused by a single factor.
B. They had relatively little impact on small mammals.
C. They wiped out nearly all of the world's large mammal species.
D. They occurred slowly over a period of thousands of years.

4. The word “sparser” in the passage is closest in meaning to
A. more thinly distributed
B. more threatened
C. less adapted
D. less mobile

5. All of the following are mentioned in paragraph 2 as changes that occurred during the late Pleistocene

EXCEPT:
A. The Eurasian tundras became more forested as both temperature and rainfall increased.
B. The Arctic region became less productive, and much of its fauna and flora began to disappear.
C. The southwestern United States became much drier, resulting in a decline in species diversity.
D. The North American open steppe tundras became cooler, resulting in a decrease in vegetation.

6. In paragraph 3, why does the author point out that some animals living in southern France migrated to the Arctic when the climate became warmer
A. To show that more suitable habitats existed at the time that the megafauna became extinct
B. To question the idea that the megafauna were able to migrate to more suitable habitats
C. To provide evidence that weakens the climate hypothesis for the megafauna extinctions
D. To argue that smaller animals are more successful at adapting to rapid changes in climate

7. The word “episodes” in the passage is closest in meaning to
A. threats
B. patterns
C. reports
D. occurrences

8. The word “Proponents” in the passage is closest in meaning to
A. creators
B. opponents
C. reviewers
D. supporters

9. In paragraph 5, why does the author discuss what happened in Australia 40,000 years ago
A. To suggest that humans most likely arrived in North and South America much earlier than 11,000 years ago
B. To make a comparison that supports the prehistoric overkill hypothesis
C. To argue that most extinctions can be traced to the impact of humans on the environment
D. To emphasize the similarities between the extinctions that occurred in Australia and those that occurred in Africa and Europe

10. The word “swift” in the passage is closest in meaning to
A. effective
B. unexpected
C. quick
D. complete

11. According to paragraph 6, archaeological evidence of settlement patterns in North and South America indicates which of the following
A. Human populations may have been too small and too far apart to have caused the extinction of large mammals.

B. Humans may have lived too far away from the habitats of large mammals to have been responsible for their extinctions.
C. Humans probably did not cause the extinction of large mammals, because they spent far more time gathering food than hunting.
D. Humans probably did not remain in their settlements long enough to have a significant impact on populations of large mammals.

12. In paragraph 6, the author identifies all of the following as being problems with the prehistoric overkill hypothesis EXCEPT:
A. There were not enough people to kill so many species of large animals.
B. There is little evidence to show that extinct animals were hunted.
C. Prehistoric Europeans apparently preferred hunting smaller animals.
D. It took 600 years for humans in New Zealand to exterminate just a few species of moa birds.

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

It should be noted, however, that island conditions that lead to extinction, such as limited space to escape predators, do not apply to landmasses such as continents.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer choices

A. Rapid climate change has been proposed as a cause of the extinctions, though there is strong evidence that mammals were able to survive similar climate changes in the past.
B. The climatic hypothesis has gained more support than the prehistoric overkill hypothesis because climate change can explain why very few extinctions occurred in Europe and Africa.
C. Some researchers have begun to doubt the idea that mass extinctions occurred at the end of the Pleistocene, because large animal remains are rarely found at settlements dating from this time.
D. Late Pleistocene hunters may have killed off large mammals when they first arrived in certain areas, but evidence from settlements and animal remains does not often support this hypothesis.
E. According to the prehistoric overkill hypothesis, the extinctions were concentrated in North and South America because these areas had more hunters and smaller populations of large mammals.
F. Although neither the climatic hypothesis nor the prehistoric overkill hypothesis alone explains late Pleistocene extinctions, elements of both and other factors may have contributed to the extinctions.

Passage 24

The Cambrian Explosion

1 The earliest fossil evidence for eukaryotes complex organisms whose cells contain a distinct nucleus dates to only about 1.2 billion years ago. The fossil record suggests that animal evolution progressed slowly, with relatively little change seen between fossils from 1.2 billion years ago and those from a half-billion years later. But then something quite dramatic happened as can be judged by the many different animal groups that suddenly appear in the fossil record.

2 Biologists classify animals according to their basic body plans. For example, the basic body plan shared by mammals and reptiles is fundamentally different from that of insects. Animals are grouped by body plan into what biologists call phyla. Mammals and reptiles both belong to the single phylum Chordata, which includes animals with internal skeletons. Insects, crabs, and spiders belong to the phylum Arthropoda, which contains animals with body features such as jointed legs, an external skeleton, and segmented bodies. Classifying animals into phyla is an ongoing project for biologists, but modern animals appear to comprise about 30 different phyla, each representing a different body plan.

3 Remarkably, nearly all of these different body plans, plus a few others that have gone extinct, make their first known appearance in the geological record during a period spanning only about 40 million years less than about 1 percent of Earth's history. This remarkable flowering of animal diversity appears to have begun about 545 million years ago, which corresponds to the start of the Cambrian period. Hence it is called the Cambrian explosion.

4 The fact that the Cambrian explosion marks the only major diversification of body plans in the geological record presents us with two important and related questions: Why, so long after the origin of eukaryotes, did the pace of evolution suddenly accelerate dramatically at the beginning of the Cambrian, and why hasn't there been another period of similarly explosive diversification since then

5 We can identify at least four factors that might have contributed to the Cambrian explosion. First, the oxygen level in our atmosphere may have remained well below its present level until about the time of the Cambrian explosion. Thus, the rapid diversification in animal life may have occurred at least in part because oxygen reached a critical level for the survival of larger and more energy-intensive life forms.

6 A second factor that may have been important was the evolution of genetic complexity. As eukaryotes evolved, they developed more and more genetic variation in their DNA. Some scientists believe that the Cambrian explosion marks the point at which organisms developed certain kinds of genes (homeobox genes) that control body form and that could be combined in different ways, allowing the evolution of a great diversity of forms over time.

7 A third factor may have been climate change. Geological evidence points to a series of episodes in which

Earth froze over before the Cambrian began. The extreme climate conditions of these episodes eliminated many species, leaving a wide array of ecological niches available into which new species could rapidly evolve when climate conditions eased at the beginning of the Cambrian.

8 A fourth factor may have been the absence of efficient predators. Early predatory animals were probably not very sophisticated, so some evolving animals that later might have been eliminated by predation were given a chance to survive, making the beginning of the Cambrian period a window of opportunity for many different adaptations to establish themselves in the environment.

8 This last idea may partly explain why no similar explosion of diversity has taken place since the Cambrian: once predators were efficient and widespread, it may have been virtually impossible for animals with entirely new body forms to find an environmental niche in which they could escape predation. ■ Or it may be that while more body plans may have been possible at some early point in evolution, it was not possible to evolve into those other body plans from the body plans that evolved in the Cambrian. ■ Or perhaps the various body forms that arose during the Cambrian explosion represent the full range of forms possible given the basic genetic resources that characterize all Earth's organisms. ■ In any case, no fundamentally new body forms have emerged since the Cambrian explosion. ■

1. Paragraph 1 implies which of the following about evolutionary change
A. Eukaryotes have a very slow rate of evolution.
B. The fossil record of evolutionary change is incomplete for the first half-billion years of animal evolution.
C. Evolution has not always proceeded at the same rate.
D. Evolutionary rates of change in animals were slowing down considerably before a dramatic reversal happened 1.2 billion years ago.

2. The word “ongoing” in the passage is closest in meaning to
A. uncertain
B. full-time
C. important
D. continuing

3. In paragraph 2, why does the author provide the information that Arthropoda represents animals with features like jointed legs, an external skeleton, and segmented body parts.
A. To indicate basic physical differences among insects, crabs, and spiders
B. To illustrate the types of physical characteristics considered when classifying animals
C. To show the complexity of features that have evolved in organisms
D. To demonstrate that some phyla include a wider range of body plans than others do

4. The phrase “corresponds to” in the passage is closest in meaning to
A. causes
B. occurs before
C. differs from
D. matches

5. According to paragraphs 3 and 4, what was remarkable about the Cambrian explosion
A. That the evolution of species occurred so soon after the first eukaryotes appeared
B. That most of the known animal types appeared in a relatively short period in history
C. That many of the animal types that appeared in the period have survived until today
D. That the pace of evolution slowed before it accelerated

6. The function of the two questions in paragraph 4 is to
A. recognize two common questions that cannot be addressed within the passage
B. present the two different points of view contrasted in the passage
C. provide important objections to the central idea of the passage
D. indicate two important questions that will be explored in the passage

7. Paragraph 5 implies which of the following about oxygen
A. It was not essential for the life forms that appeared before the Cambrian period.
B. It has remained at relatively the same level since the beginning of the fossil record.
C. Its changes in levels are associated with animal extinctions.
D. Its levels before the Cambrian period were too low for large animals to survive.

8. The word “complexity” in the passage is closest in meaning to
A. sophistication
B. adaptation
C. improvement
D. variation

9. The word “allowing” in the passage is closest in meaning to
A. resulting in
B. making possible
C. preceding
D. spreading

10. According to paragraph 7, all of the following occurred before the Cambrian began EXCEPT:
A. Almost all of Earth froze over.
B. New ecological niches were filled by new species.
C. A series of extreme climate episodes occurred.
D. Many species became extinct.

11. 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. Predators at the beginning of the Cambrian period had to become more sophisticated in order to survive in environments with newly adapted animals.
B. New adaptations had an opportunity to survive at the beginning of the Cambrian period because early predators were not yet sophisticated enough to eliminate the animals with these adaptations.

C. Early predatory animals lacked sophisticated adaptations because they did not develop them during a window of opportunity in the early Cambrian period.
D. Early predators had an opportunity at the beginning of the Cambrian period to remove new adaptations before they established themselves in the environment.

12. Paragraph 9 suggests all of the following possible explanations for the uniqueness of the Cambrian explosion EXCEPT
A. the inability of later animals to evolve body plans different from those that appeared during the Cambrian period
B. the post-Cambrian appearance of efficient predators occupying nearly every environmental niche
C. the decline in the number of habitats having sufficient resources to support the rapid evolution of new species
D. the limited range of genetically possible body types

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

After all, evolution of body structure can act only on the structure that already exists.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text. Answer Choices
A. Biologists want to find out why the rapid diversification of body forms did not happen soon after the appearance of eukaryotes around 1.2 billion years ago.
B. Biologists classify animals according to their body plans into phyla such as Chordata, animals with a backbone, and Arthropoda, animals with segmented exoskeletons.
C. The Cambrian explosion was a unique episode in the history of evolution that produced nearly all of the 30 or so animal body plans that have ever been seen.
D. The Cambrian explosion may have been aided by genes that could yield a variety of body forms and the inability of early predators to eliminate the new forms.
E. Once predators became efficient after the Cambrian explosion, they were able to eliminate any animals that began to evolve a new body plan.
F. At the beginning of the Cambrian, an increase in oxygen needed for animal growth and the return of a hospitable climate may have contributed to the Cambrian explosion.

Passage 25

Origins of the Megaliths

1 Since the days of the earliest antiquarians, scholars have been puzzled by the many Neolithic (4000 B.C. - 2200 B.C.) communal tombs known as megaliths along Europe's Atlantic seaboard. Although considerable variations are found in the architectural form of these impressive monuments, there is a general overriding similarity in design and, particularly, in the use of massive stones.

2 The construction of such large and architecturally complex tombs by European barbarians struck early prehistorians as unlikely. The Bronze Age seafaring civilizations that lived in the region of the Aegean Sea (3000 B.C.- 1000 B.C.), among whom collective burial and a diversity of stone-built tombs were known, seemed a probable source of inspiration. It was suggested that Aegean people had visited Iberia in southwestern Europe in search of metal ores and had introduced the idea of collective burial in massive tombs, which then spread northward to Brittany, Britain, North Germany, and Scandinavia.

3 Radiocarbon dates for a fortified settlement of megalith builders at Los Millares in Spain appeared to confirm this picture, though dates for megaliths in Brittany seemed too early. When calibrated, however, it became clear that radiocarbon dates were universally too early to support a Bronze Age Aegean origin. It is now clear that the megaliths are a western and northern European invention, not an introduced idea. Even so, they are still a subject of speculation and inquiry. What induced their builders to invest massive efforts in erecting such monumental tombs. How was the necessary labor force assembled. What underlies their striking similarities

4 One answer to the last question was proposed by Professor Grahame Clark, one of Britain's greatest prehistorians. Investigating the megaliths of southern Sweden, he noted that one group was concentrated in coastal locations from which deep-sea fish such as cod, haddock, and ling could have been caught in winter. Historically, much of the Atlantic was linked by the travels of people who fished, and this could well have provided a mechanism by which the megalith idea and fashions in the style of tomb architecture spread between coastal Iberia, Brittany, Ireland, western England and Scotland, and Scandinavia. The high concentrations of megaliths on coasts and the surprising number of megaliths found on small islands may support a connection with fishing.

5 Professor Colin Renfrew of the University of Cambridge, England, however, views the similarities as similar responses to similar needs. At the structural level, the passage that forms a major element of many graves could have been devised independently in different areas to meet the need for repeated access to the interior of these communal tombs. Other structural resemblances could be due to similarities in the raw materials available. In answer to the question of why the idea of building monumental tombs should arise independently in a number of areas, he cites the similarities in their backgrounds.

6 Most megaliths occur in areas inhabited in the postglacial period by Mesolithic hunter-gatherers (~8500

B.C. ¨C 4000 B.C.). Their adoption of agriculture through contact with Neolithic farmers, Renfrew argues, led to a population explosion in the region and consequent competition for farmland between neighboring groups. In the face of potential conflict, the groups may have found it desirable to define their territories and emphasize their boundaries. The construction of megaliths could have arisen in response to this need.

7 Renfrew has studied two circumscribed areas, the Scottish islands of Arran and Rousay, to examine this hypothesis more closely. He found that a division of the arable land into territories, each containing one megalith, results in units that correspond in size to the individual farming communities of recent times in the same area. Each unit supported between 10 and 50 people. The labor needed to put up a megalith would probably be beyond the capabilities of a community this size. But Renfrew argues that the cooperation of other communities could be secured by some form of recognized social incentive perhaps a period of feasting at which communal building was one of several activities.

8 Most megaliths contain collective burials. ■ Different tombs used different arrangements, but there seems to have been an underlying theme: people placed in these tombs were representative of their society, but their identity as individuals was not important. ■ The tombs belonged to the ancestors, through whom the living society laid claim to their land. ■ This interpretation reinforces Renfrew's view of the megaliths as territorial markers. ■

1. The word “collective” in the passage is closest in meaning to
A. aboveground
B. public
C. elaborate
D. group

2. According to paragraph 2, early prehistorians thought the Aegean people of the Bronze Age might have influenced megalith building along the Atlantic seaboard because they
A. had established commercial routes along the Atlantic seaboard
B. had been in Iberia, where they introduced the idea of burial in very large tombs
C. were thought to have found megaliths in Iberia when searching for metals
D. were thought to have passed along the concept of burial in monumental tombs as they explored Brittany, Britain, North Germany, and Scandinavia

3. In paragraph 3, why does the author discuss the results of radiocarbon dates
A. To support the idea that megaliths spread rapidly during the Bronze Age
B. To question the idea that megaliths have a religious origin
C. To provide evidence against the theory that Bronze Age Aegeans inspired the megaliths
D. To argue that the megaliths in Brittany are older than the megaliths in Los Millares

4. The word “erecting” in the passage is closest in meaning to
A. designing
B. constructing
C. protecting

D. decorating

5. According to paragraph 4, what did Professor Clark propose as a result of studying the megaliths of southern Sweden
A. Swedish megaliths are nearly identical to megaliths elsewhere.
B. People who traveled for fishing may have been responsible for the spread of megaliths in Europe.
C. Swedish megaliths were probably built after other European megaliths were built.
D. Megaliths in Europe were usually located near sites for deep-sea fishing in winter.

6. What is the purpose of discussing the passage that forms a major element of many graves
A. To provide an example of a commonly occurring feature of megaliths that might be related to a similar need
B. To argue that similarities in raw materials were responsible for the similarity of passages
C. To explain how repeated access to the interior of the communal tombs was possible
D. To provide evidence that the builders of the megaliths had similar backgrounds

7. The word “consequent” in the passage is closest in meaning to
A. intense
B. increasing
C. resulting
D. continual

8. According to paragraph 6, Professor Renfrew has argued that one factor leading to the rise of megaliths in Europe was
A. the adoption of farming by Mesolithic hunter-gatherers
B. the transition from a glacial to a postglacial climate
C. the relocation of Mesolithic populations from one region to another
D. the conflict over whether areas inhabited by Mesolithic peoples would be used for farming

9. The phrase this hypothesis in the passage refers to the idea that
A. there was competition for territory between Mesolithic hunter-gathers and invading Neolithic farmers
B. a population explosion brought about a division of the region's Neolithic farmers into neighboring groups
C. the need of neighboring groups to define their territories led to the construction of megaliths
D. the construction of megaliths was a way of competing for farmland

10. According to paragraph 7, what did Renfrew conclude about the megaliths of Arran and Rousay
A. Each megalith was associated with a specific agricultural community.
B. Each megalith was built by between 10 and 50 people.
C. Some megaliths were built using stones quarried at other places.
D. Some megaliths were built gradually over time rather than all at once.

11. The word “reinforces” in the passage is closest in meaning to
A. represents

B. differs from
C. expands on
D. supports

12. According to the passage, all of the following were true of the megaliths along the Atlantic seaboard EXCEPT:
A. They often had a main passageway.
B. They identified the individuals buried within them.
C. They were built before the Aegean Bronze Age.
D. They differed somewhat in style from region to region.

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

So it might seem that megaliths could not have been used by an individual community to mark its land.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. The Bronze Age Aegeans most probably built some of the tombs in Iberia.
B. Scientific evidence supports the idea that the megaliths were a western and northern European invention.
C. Most megaliths are found in coastal regions, suggesting that people fishing may have used them to guide their travels.
D. Archeologists have found enough indicators to believe that the layout of tombs in the landscape reflects each community's social organization.
E. The high proportion of coastal megaliths has given rise to the idea that megalith building was related to fishing.
F. It has been suggested that megaliths arose in response to the spread of agriculture and competition for farmland.

Passage 26

The Extinction of the Dinosaurs

1 Geologists define the boundary between sediment layers of the Cretaceous period (144-65 million years ago) and the Paleocene period (65-55 million years ago) in part by the types and amounts of rocks and fossils they contain or lack. Before the limit of 65 million years ago, marine strata are rich in calcium carbonate due to accumulations of fossils of microscopic algae deposited on the sea floor. Above the 65-million-year limit, sea-floor sediments contain much less calcium carbonate, and fossils of several families of mollusks are no longer found. In continental sediments, dinosaur fossils, though frequent before 65 million years ago, are totally absent.

2 By contrast, new families of mammals appear, including large mammals for the first time. Scientists wondered for many years about what could have caused the dinosaurs' rapid disappearance at the end of the Cretaceous period, coming up with a great variety of theories and scenarios. For some, it could have been due to unfavorable genetic changes triggered by a dramatic increase by a factor of 10, 100, 1, 000 in cosmic-ray particles reaching the Earth after a supernova explosion somewhere in the neighborhood of the solar system. For these high-energy particles to affect life, they would have to get through the protective barrier of the Earth's magnetosphere, the region of the upper atmosphere controlled by Earth's magnetic field. That could have happened if the cloud of particles from the supernova explosion reached the Earth during a period when the magnetosphere was weakened, something that may happen when the Earth's magnetic field changes direction. And we know that the magnetic north and south poles of the Earth switch on the average twice every million years. However, this is not the only possible explanation for dinosaur destruction.

3 Other theories have raised the possibility of strong climate changes in the tropics (but they then must be explained). Certainly, if climate changes, the changed distributions of temperature and rainfall modify the conditions that favor one ecosystem over another. The extinction of a particular family, genus, or species may result from a complicated chain of indirect causes and effects. Over thirty years ago, scientist Carl Sagan quoted one suggestion that the demise of the dinosaurs resulted from the disappearance of a species of fern plant that was important for dinosaur digestion. Other theories involved a worldwide cold wave following the spread of a layer of cold but not very salty water in the world's oceans, which floated on the surface because, with its low salinity, the water was less dense.

4 Proponents of another theory that remains under consideration today postulate that the extinction of the dinosaurs corresponds to a period of intense volcanic activity. It's not a question of just one or even of a thousand eruptions comparable to the explosion of Krakatoa in 1883, one of the largest volcanic events in modern times, but rather of a prolonged period of activity. On the Deccan plateau in India, basalt (volcanic) rocks cover more than 500, 000 square kilometers (nearly 200, 000 square miles), and correspond to massive lava outflows occurring precisely at the end of the Cretaceous. This sort of outflow could correspond to volcanic activity similar to the activity that drives sea-floor spreading, with lava

emerging from elongated fractures in the crust rather than from craters.

5 ■ The volcanic convulsion that buried the Deccan plateau in lava must also have changed the composition of the atmosphere and severely affected climate. ■ Initially, there must have been strong sudden cooling resulting from the blocking of sunlight by sulfate aerosol veils in the stratosphere (part of the Earth's atmosphere). ■ If strong cooling lasted a year after the formation of the aerosols, it would have been the death of tropical species unable to adapt to such a volcanic winter. ■

6 However, a long period of strong volcanic activity (again, remember thousands of Krakatoas) would at the same time have added a substantial amount of carbon dioxide to the atmosphere, reinforcing the greenhouse effect. This would gradually warm things up, ending the extended cold snap and producing global warming together with geographic shifts of humid and arid (dry) zones. Certainly things would change to upset living conditions, leading to the extinction of some species while others would profit, if only from the disappearance of predators.

1. According to paragraph 1, which of the following is true of Paleocene sediments
A. They lack fossils from some families of mammals found in Cretaceous sediments.
B. They contain fossils of dinosaurs.
C. They contain fossils of some animals that did not exist during the Cretaceous.
D. They contain fossils of more kinds of mollusks than are found in Cretaceous sediments.

2. The word “unfavorable” in the passage is closest in meaning to
A. Unusual
B. Disadvantageous
C. Sudden
D. major

3. The word “triggered” in the passage is closest in meaning to
A. initiated
B. intensified
C. followed
D. aided

4. Why does the author include the information that “the magnetic north and south poles of the Earth switch on the average twice every million years”
A. To provide evidence showing that Earth's protective barrier is difficult to get through
B. To show that it is reasonable to think that particles from a supernova explosion could have reached Earth
C. To explain why some scientists believe a supernova explosion may have occurred near our solar system
D. To help explain why some scientists have rejected the theory presented in paragraph 2

5. According to the theory discussed in paragraph 2，a weakening of Earth's magnetosphere may have
A. caused a supernova to explode near our solar system
B. allowed gene-altering particles to reach Earth's surface

C. forced Earth's magnetic field to change direction
D. allowed clouds of protective particles to escape from Earth's upper atmosphere

6. AII of the following are mentioned in paragraph 3 as possible causes for the extinction of the dinosaurs EXCEPT
A. a change in the diet of dinosaurs
B. a change in the climate of the tropics
C. a decrease in global temperatures
D. a decrease in deep ocean salinity

7. In paragraph 3，why does the author include the quotation by Carl Sagan
A. To explain the connection between dinosaur extinction and the extinction of other animal species
B. To support the claim about species extinction being due to indirect causes and effects
C. To show that scientists have revised their ideas greatly in the last thirty years
D. To identify the differences between the various theories for the extinction of dinosaurs

8. According to paragraph 4，what was one unusual aspect of the volcanic activity at the end of the Cretaceous
A. Some explosions were much larger than Krakatoa.
B. Eruptions occurred over a long period of time.
C. Active volcanoes were sometimes separated by many kilometers.
D. There were active volcanoes in the sea as well as on land.

9. Which of the following is presented in paragraph 4 as evidence that intense volcanic activity occurred at about the time that the dinosaurs became extinct
A. The size of the volcanic craters on the Deccan plateau
B. An increase in sea-floor spreading
C. The formation in India of large amounts of a type of rock associated with volcanoes
D. The occurrence of a thousand or more volcanic explosions the size of Krakatoa

10. The word “severely” in the passage is closest in meaning to
A. certainly
B. consequently
C. greatly
D. permanently

11. The word “reinforcing” in the passage is closest in meaning to
A. making possible
B. spreading
C. introducing
D. strengthening

12. According to paragraph 5，all of the following are theorized to have occurred as a result of volcanic activity EXCEPT

A. a decrease in the amount of sunlight reaching Earth's surface
B. a reduction in the number of sulfate aerosol veils in the stratosphere
C. increased dryness in some areas that were once more humid
D. changes in the atmosphere's composition resulting in an increase in temperature

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

Thus, ecosystems following periods of extensive volcanic activity necessarily had different combinations of species than earlier ecosystems did.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Cosmic rays from a nearby supernova explosion may have penetrated Earth's atmosphere, causing genetic changes that dinosaur populations could not survive.
B. Climate changes in the tropics may have set off a chain of indirect effects that negatively affected the ecosystems in which dinosaurs lived.
C. The spread of lava over large parts of previously favored habitats such as the Deccan Plateau may have made these favored areas uninhabitable for many years.
D. Although the volcanic winter resulting from the formation of sulfate aerosols eventually ended, temperatures may have remained below levels required by dinosaurs to survive.
E. Temperature changes and geographic shifts in climate zones due to the atmospheric effects of volcanic activity may have been significant enough to cause extinction.
F. To be convincing, theories about what caused dinosaurs to become extinct must be able to explain the disappearance of other predators in the food chain at the same time.

Passage 27

Dinosaurs and Parental Care

1 From fossil evidence alone the question of whether or not dinosaurs cared for their young is very difficult to answer. ■ Because behaviors are not preserved in the fossil record, we can only make inferences from indirect evidence. ■ Parental care can be divided into two types of behavior: prehatching (building nests and incubating eggs—for example, sitting on top of them so as to warm the eggs and encourage hatching) and posthatching (feeding the young and guarding the nests). ■ Most of our evidence comes from alleged dinosaur rookeries (places where nests are built). ■ Several have been excavated in eastern Montana, where a large concentration of dinosaur nests was found at a place now called Egg Mountain. Most of these probably belonged to the hadrosaur Maiasaura. Preserved in these nests are the bones of baby dinosaurs. The finds at Egg Mountain and other sites around the world document that dinosaurs laid their eggs in nests.

2 The nests at Egg Mountain are reported to be equally spaced, separated by a space corresponding to the length of an adult Maiasaura. From this arrangement scientists have inferred that the nests were separated in this way to allow incubation in a tightly packed nesting colony. Although this interpretation is open to challenge, the discovery of Oviraptor adults on top of Oviraptor egg clutches (as determined by embryos in some eggs), is relatively powerful evidence that at least these dinosaurs incubated their nests.

3 Evidence for parental care following hatching is much more controversial. Behavioral speculation based on indirect fossil evidence is dangerous because the data is not always as unambiguous as might appear. At Egg Mountain, many nests contain baby dinosaur bones. Not all the dinosaurs in the nest are the same size. Many of the small bones found in the nests are associated with jaws and teeth, teeth that show signs of wear. It seems reasonable to assume that the wear was caused by the chewing of the coarse plants that were the hatchlings' diet. Because the young were still in the nest, this food may have been brought to the rookery by foraging adults. This line of reasoning suggests that these animals had an advanced system of parental care. A closer look at the evidence clouds this interpretation. Analysis of dinosaur embryos indicates that worn surfaces are present on the teeth of juveniles even before hatching. Just as a human baby moves inside the mother before birth, modern-day archosaurs also grind their teeth before birth, wearing the surface in some spots. Thus, the fossil evidence for an advanced parental care system in extinct dinosaurs is suggestive but inconclusive, and it is hard even to imagine the sort of paleontologic discovery that could settle this debate for good.

4 The strongest evidence that extinct dinosaurs had some form of advanced parental care system is based on an understanding of the phylogenetic relationships among dinosaurs and their closest living relatives. Living dinosaurs (birds), even primitive ones such as ostriches and kiwis, exhibit parental care, so some form of parental care can be inferred to have existed in the last common ancestor of all birds. Although unappreciated, crocodiles are reptiles that are also caring parents. They build nests, guard the nests, and in some cases dig their young out of the nest when they hear the chirping young ones hatching. The young

even communicate with each other while still in the egg by high-frequency squeaks (as birds do). Some evidence suggests that this squeaking is a cue for the synchronization of the hatching. Since birds and crocodiles share a common ancestor, the simplest explanation for the characteristics they share (such as nest building and some form of parental care) is that they evolved only once—that these attributes were present in their common ancestor and passed on to its descendants. Because extinct dinosaurs also descended from that ancestor, the simplest and most general theory is that extinct dinosaurs also shared these characteristics, even though they cannot be directly observed, and we cannot be sure how elaborate their parental care was.

1. The word "alleged" in the passage is closet in meaning to
A. scattered
B. supposed
C. isolated
D. exposed

2. Paragraph 1 answers which of the following questions about parental care in dinosaurs?
A. Which type of parental care was more important for the survival of dinosaur young, prehatching care or posthatching care?
B. Why were dinosaur remains in eastern Montana preserved rather than destroyed over time?
C. Did Maiasaura hadrosaurs provide types of parental care not provided by other dinosaurs?
D. What evidence supports the view that Maiasaura females laid their eggs in nests?

3. According to paragraphs 1 and 2, the fossil record most clearly shows that dinosaurs engaged in which of the following behaviors?
A. Laying eggs in nests
B. Hiding eggs
C. Feeding young
D. Storing food

4. According to paragraph 2, which of the following supports the theory that the Maiasaura incubated their eggs?
A. The examination of embryos found in some eggs
B. The large concentration of nests in one location
C. The amount of space between nests
D. The discovery of adult Maiasaura bones on top of egg clutches

5. The word "controversial" in the passage is closet in meaning to
A. limited
B. convincing
C. relevant
D. debatable

6. The word "inconclusive" in the passage is closet in meaning to

A. not decisive
B. insignificant
C. not valid
D. misleading

7. According to paragraph 3, the patterns of wear found on the teeth of young dinosaurs may indicate which of the following?
A. Baby dinosaurs were eating food brought to them by their parents.
B. Early development of jaw and teeth varied according to a dinosaur's size.
C. Dinosaurs went foraging for food at an early age.
D. Baby dinosaurs did not begin to eat solid food until after they left the nest.

8. In paragraph 3, why does the author mention that baby archosaurs ground their teeth inside the egg?
A. To support the claim that baby dinosaurs in the egg shared certain behaviors with human babies before birth
B. To contrast the behavior of bay archosaurs with that of other types of dinosaurs
C. To cast doubt on the claim that adult dinosaurs fed their hatchlings in the nest
D. To explain why the teeth of baby archosaurs were more worn than those of other juveniles

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 simplest explanation for the similarities between birds and crocodiles is that they evolved at the same time.
B. A common ancestor is probably the source of the shared traits of crocodiles and birds.
C. The originally similar traits of birds and crocodiles increased after evolving through a shared ancestor.
D. Only one shared pattern of behavior—that of nest building—was present in the common ancestor of birds and crocodiles.

10. The word "elaborate" in the passage is closet in meaning to
A. widespread
B. reliable
C. well developed
D. long lasting

11. Paragraph 4 answers all of the following questions about crocodiles EXCEPT:
A. What is the evidence that crocodiles are caring parents?
B. Why do crocodile parents communicate with the young inside their eggs?
C. What is a possible reason for the high-frequency sounds that crocodiles make inside their eggs?
D. How do crocodiles participate in the hatching process of their young?

12. In paragraph 4, the author discusses birds and crocodiles in order to
A. contrast patterns of parenting behavior in both living and extinct animals
B. provide evidence that sophisticated parental care behaviors evolved only relatively recently

C. demonstrate that parental care behaviors have continued to evolve since the time of the dinosaurs
D. support the theory that extinct dinosaurs probably inherited some kind of parental care system

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

Evidence of the former is easier to find than that of the latter.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Because baby dinosaur bones and eggs were very delicate, there are relatively few preserved as fossils, so little is known about dinosaur young.
B. Fossils from sites like Egg Mountain indicate that dinosaurs built nests, and perhaps that they incubated their eggs and fed their hatchlings.
C. Fossil evidence such as the spacing of nests may indicate advanced parental care but can have different interpretations.
D. Tightly packed Oviraplor rookeries indicate that dinosaurs may have tended to nest in large colonies in order to better protect both eggs and hatchlings.
E. Discovery of hadrosaur bones of different sizes in the same nest may indicate that, in some species, older siblings took care of younger ones.
F. The strongest evidence comes from extinct dinosaurs' nearest living relatives, birds and crocodiles, who do engage in many forms of parental care.

Passage 28

Sumerian Contributions

1 Before about 4500 B.C., lower Mesopotamia, the region between the Tigris and Euphrates rivers just north of the Persian Gulf, was much less densely populated than other inhabited regions of the Near and Middle East. Its marshy soil, subject to annual inundations (floods) from the rivers, was not suited to the primitive hoe culture of early agriculture, in which land was cultivated without domestic animals or beasts. Moreover, the land was virtually treeless and lacked building stone and mineral resources. During the next thousand years, however, this unpromising area became the seat of Sumer, the first great civilization known to history, with large concentrations of people, bustling cities, monumental architecture, and a wealth of religious, artistic, and literary traditions that influenced other ancient civilizations for thousands of years. The exact sequence of events that led to this culmination is unknown, but it is clear that the economic basis of this first civilization lay in its highly productive agriculture.

2 The natural fertility of the rich black soil was renewed annually by the silt left from the spring floods of the Tigris and Euphrates rivers. Harnessing its full productive power, however, required an elaborate system of drainage and irrigation, which in turn required a large and well-disciplined workforce as well as skilled management and supervision. The latter were supplied by a class of priests and warriors who ruled a large population of peasants and artisans. Through taxation and other means the rulers extracted wealth from the population and then used it to construct temples and other public buildings and to create works of art. That gave them (or some of them) the leisure to perfect the other refinements of civilization.

3 The rise of civilization brought with it a far more complex division of labor and system of economic organization. Full-time artisans specialized in the manufacture of textiles and pottery, metalworking, and other crafts. The professions of architecture, engineering, and medicine, among others, were born. Weights and measures were systematized, mathematics was invented, and primitive forms of science emerged. Since Sumer was virtually devoid of natural resources other than its rich soil, it traded with other people, thereby contributing to the diffusion of Sumerian civilization. The scarcity of stone, for tools as well as for buildings, probably hastened the adoption of copper and bronze. Copper, at least, was already known before the rise of Sumerian civilization, but lack of demand for it among the Stone Age peasant villages inhibited its widespread use. In Sumerian cities, on the other hand, stone imported by sea through the Persian Gulf from Oman and downriver from the mountains of Anatolia and the Caucasus had to compete with imported copper, and the latter proved more economical and effective for a variety of uses. Thereafter metallurgy, the technology of separating metals from their ores and purifying them, was regarded as one of the hallmarks of civilization.

4 Sumer's greatest contribution to subsequent civilizations, the invention of writing, likewise grew out of economic necessity. The early cities—Eridu, Ur, Uruk, and Lagash—were temple cities: both economic and religious organizations centered on the temple of the local patron deity, represented by a priestly hierarchy. Members of the hierarchy directed the construction and maintenance of irrigation and drainage

systems, oversaw agricultural activities, and supervised the collection of produce as taxation or tribute (money or other wealth given as a sign of submission or in return for protection). The need to keep records of the sources and uses of this tribute led to the use of simple pictographs on clay tablets sometime before 3000 B.C. By about 2800 B.C. the pictographs had been stylized into the system of writing known as cuneiform (using wedge-shaped marks on clay), a distinctive characteristic of Mesopotamian civilization. It is one of the few examples in history of a significant innovation issuing from a bureaucratic organization.

5 Although writing originated in response to the need for administrative bookkeeping, it soon found multiple religious, literary, and economic uses. In a later phase of development, after the strict temple-centered organization of the economy had given way to greater freedom of enterprise, clay tablets were used for recording the details of contracts, debts, and other commercial and financial transactions.

1. The word “unpromising” in the passage is closet in meaning to
A. unfavorable
B. underdeveloped
C. distant
D. expansive

2. The phrase “a wealth of” in the passage is closet in meaning to
A. a strong competition among
B. a valuable source of
C. a deep respect for
D. an abundance of

3. According to paragraph 1, which of the following was NOT true of lower Mesopotamia before 4500 B.C.?
A. It was flooded every year by rivers.
B. Its soil was unsuitable for Stone Age hoe culture agriculture.
C. It was comparatively dense in population.
D. It had few trees

4. According to paragraph 2, which of the following was true of the soil in lower Mesopotamia?
A. It was relatively unfertile until humans added other, richer types of soil to it.
B. It reached full productivity only when elaborate drainage and irrigation systems were added.
C. Its most valuable nutrients were washed away by the spring floods of the Tigris and Euphrates rivers.
D. Its silt was removed by a large, well-disciplined workforce.

5. According to paragraph 2, which of the following was true of priests and warriors in Sumerian society?
A. Their technical expertise was essential in the development of new irrigation and drainage systems.
B. They encouraged peasants and artisans to perfect the refinements of civilization.
C. They were responsible for managing and supervising the workforce.
D. They alone paid the taxes that funded the construction of temples.

6. The phrase “scarcity of” in the passage is closet in meaning to

A. using up
B. looking for
C. lacking in
D. uninterested in

7. The word “diffusion” in the passage is closet in meaning to
A. stability
B. spread
C. prosperity
D. productivity

8. Which of the following is mentioned in paragraph 3 as an effect of Sumerian trade?
A. The spread of Sumerian civilization to people outside Sumer
B. The discovery of copper
C. A rise in the price of textiles, pottery, and other goods sold within Sumer
D. An increase in the scarcity of stone within Sumer

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. Sumerian cities developed a trade in copper and stone that extended as far as Oman in the Persian Gulf and the mountains of Anatolia and the Caucasus.
B. Sumerian cities competed with traders elsewhere to produce copper that was more economical and useful than stone.
C. In Sumerian cities, imported copper often proved more economical and useful than imported stone.
D. The copper and stone imported from Oman, Anatolia, and the Caucasus proved more economical and effective than the copper and stone found in Sumerian cities.

10. In paragraph 4, why does the author point out that the economic and religious organizations of early Sumerian cities centered on local temples?
A. To identify the bureaucratic needs that led to the development of writing
B. To identify factors responsible for the significant influence of Sumerian writing on subsequent civilizations
C. To explain why few examples of significant innovations have issued from a bureaucratic organization
D. To explain why the use of simple pictographs eventually became stylized into the system of writing known as cuneiform

11. Paragraph 4 implies all the following about cuneiform EXCEPT:
A. It arose after 3000 B.C.
B. It involved stylized pictographs.
C. It was designed to further the purposes of the priestly bureaucracy.
D. It was developed outside of the early temple cities.

12. According to paragraph 5, which of the following was true of Sumerian writing during the period of

greater freedom of enterprise?

A. Knowledge of it was limited to the temple-centered administration.
B. It was used for purposes beyond those for which it was first created.
C. It was used primarily to help keep the traditional leadership in power.
D. It led to further technological developments by 2800 B.C.

Passage 29

England's Economy in sixteenth century

1 In the last half of the sixteenth century England emerged as a commercial and manufacturing power in Europe due to a combination of demographic, agricultural and industrial factors. The population of England and Wales grew rapidly from about 2.5 million in the 1520s to more than 3.5 million in 1580, reaching about 4.5 million in 1610. Reduced mortality rates and increased fertility, the latter probably generated by expanding work opportunities in manufacturing and farming (leading to earlier marriage and more children), explained this rapid rise in population. While epidemics and plague occasionally took their toll, the people in England still suffered less than did those in continental Europe. Furthermore, the country had been pulled out of the war that occurred in France and central Europe during the same period.

2 England provides the prominent example of the expansion of agricultural production well before the general European agricultural revolution of the eighteenth and nineteenth centuries. A larger population stimulated the increased woollen through crop civilization. English agriculture became more efficient and market-oriented than almost anywhere else on the continent. Between 1450 and 1640 the yield of grain per acre increased by at least thirty percent. In sharp contrast with farming in Spain, English land owners brought more dense marshes and woodlands into cultivation.

3 The great land estates of the English society largely remained intact and many wealthy land owners aggressively increased the size of their holdings, a precondition for increased productivity. Marriages between the children of landowners also increased the size of land estates. Primogeniture (the full inheritance of land by the eldest son) helped prevent land from being subdivided. Younger sons of independent land owners left the family and went to find other respective locations. Larger farms were conducive more to commercialized farming at the time when an expanding population pushed up demand and prices. Farmland owners turned part of their land into pasture land for sheep in order to adapt to developing woollen trade.

4 Some of the great land owners as well as Yeomen (farmers whose holdings and security of land tenure guaranteed their prosperity and status), organized their holdings in the interest efficiency. Many farmers selected crops for sales in growing London market. In their quest for greater profits, many land owners put their squeeze on their tenants. Between 1580 and 1620 land lords raised rents and altered conditions of land tenure in their favor, preferring shorter phases and forcing tenants to pay an entry fee before agreeing to rent them land. Landlords evicted those who could not afford annual, more onerous terms. But they also pushed tenants toward more productive farming methods, including crop rotation.

5 England's exceptional economic development also drew the country's natural resources, including iron, timber, and coal, extracted in far greater quantity than elsewhere in the continent. New industrial development expanded the production of iron and pewter in and around the city of Birmingham.

6 But above all textile manufacturing transformed English economy. Woolens, which accounted for eighty percent of the exports, worsteds (sturdy yarn spun from combed wool fibers), and other cloth found eager buyers in England as well as in the continent. Moreover, late in the sixteenth century as English merchants began making forays across the Atlantic these textiles were also sold in the Americas. Cloth manufacturers undercut production by urban craftspeople by "putting out" work to the villages and farms of the countryside. In such domestic industry poor rural women could spin and make cading (combing fibers in preparation for spin) in their homes.

7 The English textile trade was closely dyed to Antwerp, in the Spanish Netherlands, where workers died English cloth. ■ The entrepreneur Sir Thomas Gresham became England's representative there. ■ He so enhanced the reputation of English business in that region that English merchants could operate on credit---the most prominent achievement for sixteenth century. ■ He also advised the government to explore the economic possibilities of Americas, which led to the first concerted efforts at colonization, undertaken with commercial profits in mind. ■

1. The word "generated" in the passage is closest in meaning to
A. Produced
B. Strengthened
C. followed
D. dominated

2. The word "furthermore" in the passage is closest in meaning to
A. however
B. in addition
C. similarly
D. in general

3. All of the following are mentioned in Paragraph 1 as developments that led to England's emergence as a commercial and manufacturing power **EXCEPT**
A. rapid population growth
B. an increase in the number of jobs
C. a trend toward earlier marriages
D. an end to epidemics and a plague

4. Why does the author mention that “English land owners brought more dense marshes and woodlands into cultivation”? (Paragraph 2)
A. To give an example of a way in which the English increased agricultural production
B. To emphasize the influence of English agriculture on the agriculture of other European countries
C. To emphasize that Spanish agriculture needed to improve their farming methods
D. To discuss an intended consequence of crop specialization

5. The phrase "conducive to" in the passage is closest in meaning to

A. a result of
B. favorable to
C. able to
D. expanded to

6. According to paragraph 3 why did wealthy land owners increase the size of the land they owned?
A. To avoid the necessity of arranged marriages between their children and the children of other land owners
B. To ensure that there were enough land to divide between their older and younger sons
C. To increase the number of goods that their farms produced
D. To provide more jobs for members of the colony

7. Why does the author mention that farmland owners turned part of their land into pasture land for sheep?
A. To explain why the younger sons of land owners had to leave the family land and find other jobs
B. To provide an example of a way in which large farms were eager to improve their business
C. To explain how the practice of primogeniture worked
D. To describe a strategy land owners used to give their lands from being subdivided.

8. The word "quest" in the passage is closest in meaning to
A. organization
B. exchange
C. search
D. argument

9. Which of the following is **NOT** mentioned in paragraph 4 as a way that English landlords tried to increase the efficiency of their farms?
A. encouraging the use of methods as crop rotation
B. selecting crops on the basis of demand in the London market
C. increasing rents and reducing the length of phases
D. hiring Yeomen to work on their farms instead of relying on tenants

10. The word "exceptional" in the passage is closest in meaning to
A. predictable
B. initial
C. extraordinary
D. complex

11. Select TWO answer choices that according to paragraph 6 indicate changes that occurred in the English economy. To receive credit you must select **TWO** answer choices.
A. The textile trade products became more profitable than manufacturing them.

B. Local sales of textile products increased by eighty percent.
C. English textile merchants expanded their markets inside and outside England.
D. Part of English cloth manufacturing moved to rural areas.

12. Which of the following statements about merchants during the sixteenth century can be inferred from the information in paragraph 7?
A. Most merchant activity at this time was controlled by Spain.
B. The textile market was less profitable for merchants than were other areas of trade.
C. Merchants from different countries in Europe rarely operated in the same regions.
D. During this period most European merchants did not operate on credit.

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

In addition to this achievement in Antwerp, Gresham convinced the government at home in England to authorize actions that would make trading in the rest of Europe even more profitable for English merchants.
Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

In the last half of sixteenth century England emerged as a commercial and manufacturing power in Europe.
●
●
●
Answer Choices
A. It is somewhat surprising that England was able to expand its economy during the sixteenth century because its neighbors were involved in many wars during this period.
B. In order to make more money England nobles acquired more land, pushed for more efficient farming methods, and introduced new land tenure conditions.
C. Two England's economic strengths are its use of natural resources, and its textile manufacturing, which found increased markets at home as well in Europe and in the Americas.
D. England experienced an agricultural revolution much earlier than the rest of Europe and agriculture became more efficient and market-oriented.
E. Many of the changes that land owners made to land renting rules not only made their lands more profitable but also made a life for their peasants.
F. Though he was a successful ambassador to the Spanish Netherlands, Thomas Gresham was unable to convince the English government to start colonies in America.

Passage 30

Economic Decline in Europe during the Fourteenth Century

1 After three hundred years of impressive gains in wealth and population, Europe's economy began to slow around 1300. Several factors accounted for the decline. One the most important, though perhaps the least dramatic to relate, was a shift in climate. The remarkably fair weather of the twelfth and thirteenth centuries took a decided turn for the worse in the fourteenth. Chronicler's comments, tree-ring examination, and pollen analysis all indicate that over the course of the fourteenth century Europe's average annual temperature declined approximately two degrees Celsius—which may sound like very little at first, but if one considers current projections about the possible effects of global warming, in which the average annual temperature shift is only one degree Celsius, a rather different impression emerges. As the temperature dropped, shortening the summer growing season and affecting the resilience of certain vegetable species, the wind and rain increased. This meant that crop yields declined precipitously and the agricultural economy began to contract. As food supplies dwindled, costs rose accordingly and cut into the amount of capital that people had available for other purchases or investments. This in turn added to the gradual construction of the commercial economy.

2 Just as significant were changes in the geopolitics of the Mediterranean world. The decline of the Byzantine Empire, which had dominated the eastern Mediterranean, meant the interruption or trade routes to central and eastern Asia. The rise of new political powers signaled a new era in Mediterranean connections, one in which religious loyalty and ethnic fidelity mattered more than commercial ties. Consequently the movement of goods and services between east and west began to slow. European interest in circumnavigating Africa and exploring westward into the Atlantic Ocean, in fact, originated in the desire to avoid the roadblock in the eastern Mediterranean and to tap directly into the trade with eastern Asia that had long sustained Europe's economic growth.

3 A more immediate cause of the sputtering economy was an observable absence: since the eleventh century there had been few significant changes in the technology of agriculture. Developments like the wheeled plow, the rotation of crops, and the use of natural fertilizer that had made possible the agricultural revolution of the past two hundred years had had no follow-up. Farming was still conducted in 1300 roughly the same way it had been done in 1100, but with a considerably larger population to feed, there was little surplus left to generate fresh capital. As a consequence, food production fell perilously close to subsistence level. Although the failure of agriculture to keep up with the growing population did not become a crisis until the fourteenth century, clear signs of the problem had already emerged by the middle of the thirteenth century, when occasionally low yields due to bad weather or social disruption revealed how perilous the balance between Europe's population and its food supply had become. Apart from territories beset by war, the tentativeness of the food supply became evident first on the farmlands most recently brought under cultivation during the economic depression of the twelfth century. The less established farmers of these lands frequently did not have the means to survive successive poor harvests. Tenant farmers unable to pay their rents thus began to slip into debt, and landlords who depended on rents

for their income began to rely increasingly on urban financiers for credit.

4 Even whole governments became entangled in the credit crisis, England being the most notable example. The cycle of indebtedness was hardly inevitable, but the string of bank failures and commercial collapses in the first half of the fourteenth century was striking. The famed Bardi and Peruzzi banks of Florence (the two largest financial houses of Europe) collapsed spectacularly in the 1340's. They were soon followed by the Riccardi bank of Lucca, whose massive loans had kept the English government afloat for years. Many more houses collapsed in turn.

5 An important demographic trend resulted from and contributed to the economic malaise: large-scale migration of rural populations into the cities. Europe's overall population growth from 1050 to 1300 had been primarily due to an increase in the number of rural folk. ■ But as economic forces made agrarian life more perilous around 1300, hard-pressed farmers and their families began to migrate to the cities in large numbers in search of work. ■ Many cities doubled in size, and some even tripled, over the course of just one or two generations. ■ Few were capable of absorbing such large numbers of people. ■

1. The word "accounted for" in the passage is closet in meaning to
A. predicted
B. explained
C. typified
D. worsened

2. Why does the author mention "current projections about the possible effects of global warming" in the passage?
A. To argue that global warning was a factor in the climate shift of the fourteenth century in Europe
B. To suggest that the current climate change is greater than the climate change in the fourteenth century in Europe
C. To show the direct connection between temperature changes in the fourteenth century and changes that are currently occurring in Europe
D. To emphasize the impact of the temperature change that occurred during the fourteenth century in Europe

3. In paragraph 1, all of the following are mentioned as factors that contributed to the decline of the agricultural economy in the fourteenth century EXCEPT
A. an increase in rain and wind
B. a shortened growing season
C. the investment of capital in areas other than agriculture
D. a significant drop in temperature

4. In paragraph 2, the author implies that the Byzantine Empire
A. allowed international trade from which Europe benefited
B. became a dominant force during the fourteenth century
C. centered its rule on religion and ethnic ties
D. interrupted trade routes to Asia that had already been established

5. According to paragraph 2, European interest in exploring the coast of Africa and the Atlantic Ocean grew out of a wish to
A. build a roadblock against Asian powers
B. restore valuable trade with eastern Asia
C. create faster trade routes to eastern Asia
D. connect trade between the eastern Mediterranean and the Atlantic Ocean

6. According to paragraph 3, what was one cause of the economic problems in Europe of the fourteenth century?
A. Farming techniques produced insufficient amounts of food.
B. Territories that farmers had begun to use for agriculture for the first time were disrupted by war.
C. The technological improvements in farming made in earlier centuries were abandoned after 1300.
D. Farming techniques used capital that was needed for investment in the development of technology.

7. 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. Maintaining the population of Europe with existing food supplies continued to be a problem after the middle of the thirteenth century.
B. The delicate balance between population and food supply in Europe was apparent in years of poor harvest half a century before it became a crisis in the fourteenth century.
C. Clear signals of the emerging crisis in Europe appeared in the thirteenth century in the form of bad weather, social unrest, and insufficient food.
D. In the thirteenth century, a problem emerged in Europe when the food supply was sufficient to feed the population only occasionally.

8. The word “considerably” in the passage is closet in meaning to
A. significantly
B. increasingly
C. constantly
D. naturally

9. It can be inferred from paragraph 3 that people who farmed on land recently brought under cultivation were at a bigger disadvantage than well-established farmers in fourteenth-century Europe because
A. their land was located in areas that were engaged in war
B. they relied on urban financiers for credit
C. they had no surplus on which to live or money to pay their rent
D. they did not use wheeled plows, rotate their crops, or use natural fertilizer

10. The word “striking” in the passage is closet in meaning to
A. understandable
B. necessary
C. limiting

D. noteworthy

11. Why does the author mention in the passage that the Bardi and Peruzzi banks were "the two largest financial houses of Europe"?
A. To indicate the connection between Florence banks and the English government
B. To emphasize the great impact that these bank failures had on the economy
C. To compare the Bardi and Peruzzi banks with the Riccardi bank
D. To indicate the success that these banks had previously achieved

12. Paragraph 5 suggests that the large-scale migration to cities resulted in which of the following?
A. After two generations in the cities, migrants returned to agricultural life.
B. The overall population in Europe declined.
C. Farmers worked in cities, and their families worked the land.
D. Cities contained large numbers of people who were unemployed.

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

Farms, villages, and entire regions were abandoned.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.

The economic decline in Europe during the fourteenth century resulted from several factors.

Answer Choices

A. Climate changes affected agricultural production, which led to food shortages.
B. The loss of trade with central and East Asia negatively impacted economic growth.
C. England was among the nations that suffered a credit loss.
D. The performance of the commercial economy could not keep pace with the agricultural economy.
E. The lack of innovation in agricultural technology affected food production.
F. Migrations from city to rural areas led to an increase in the number of rural folk.

Passage 31

Mesopotamian and Egyptian Settlement Patterns

1 On the basis of available evidence, there existed in ancient state-level societies a variety of urban types. These have been classified under a number of different headings, ranging from city-states to territorial- or village-states. Mesopotamia and Egypt, for example, traditionally represent the two opposing extremes along a spectrum of possible settlement distributions and types.

2 Mesopotamian city-state systems were made up of densely populated urban areas that shared a common language, status symbols, and economic systems, but their elites tended to compete with each other, often militarily, to control territory, trade routes, and other resources. Each city-state controlled a relatively small territory, often only a few hundred square kilometers, and had its own capital city, which in many cases was enclosed by a wall. In addition to its capital, a city-state might govern a number of smaller centers, as well as numerous farming villages and hamlets. Ancient Sumer is a classic example of such a system.

3 In ancient Mesopotamia, urban centers tended to be relatively large, with populations ranging from less than 1,000 to more than 100,000 inhabitants, depending on the ability of a particular city-state to control and collect payments from its neighbors. Often, a considerable number of farmers lived in these centers to secure greater protection for themselves and their possessions. It is estimated that in southern Mesopotamia (circa 2900¨C2350 BC) more than 80 percent of the total population lived in cities.

4 These cities also supported craft production, which sought to satisfy the demands of the urban elite and society as a whole. The development of craft specialization and commercial exchanges between town and countryside as well as between neighboring urban centers encouraged the growth of public markets. Although the evidence for actual marketplaces is less than clear for southern Mesopotamia, the remnants of shop-lined streets indicate vigorous commercial activity involving large numbers of people. This activity in turn promoted competition among city-states to obtain supplies of exotic raw materials. As a result of widespread access to goods produced by full-time specialists and the development of more intensive agriculture close to urban centers, Mesopotamian city-states were able to support numerous nonfood producers, possibly as high a proportion as 20 percent of the total population.

5 In contrast to Mesopotamia, ancient Egypt's population has traditionally been perceived as more evenly dispersed across the landscape, a characteristic of village-states. Topography and the formation of the early state were the major factors contributing to this dispersal. Unlike Mesopotamia, Egypt had relatively secure and defined borders, allowing a single state to dominate the area. Additionally, the villages and towns of Egypt, all of which were situated near the Nile on the river's narrow flood plain, had approximately equal access to the river and did not have to compete among themselves for water as their contemporaries in Mesopotamia were forced to do. As the main highway through Egypt, the Nile offered innumerable harbors for shipping and trading, so there was no strong locational advantage to be gained

in one area as opposed to another; hence the Egyptian population generally remained dispersed throughout the valley and delta in low densities. Trade specialists apparently were evenly spread throughout Egypt, supported by both independent workshops in small towns and royal patronage in the territorial capitals. In contrast to the defensive walls of Mesopotamian city-states, the walls of Egyptian towns primarily defined and delineated sections of the town (for example, a temple precinct from a residential area).

6 Egypt, however, was not without urban centers. ■ At points where goods entered the Nile valley via maritime routes or overland routes from the Red Sea via wadis (stream beds that remain dry except during the rainy season), the right circumstances existed for the growth of larger cities. ■ Egyptian cities and towns shared certain characteristics with other contemporary societies but also displayed unique traits influenced by the culture and environment of the Nile valley. ■ Thus, the geopolitical system that evolved in ancient Egypt was different from that of Mesopotamia; Egypt developed a village or territorial state characterized by dispersed settlements of varying size, a form of urbanism that gave Egypt its distinctive identity. ■

1. According to paragraph 1, which of the following best describes how ancient societies were organized
A. Ancient societies were classified as either city-states or village-states.
B. Most ancient societies started out as city-states and then became territorial- or village-states.
C. With the exception of Mesopotamia and Egypt, ancient societies were generally not urbanized.
D. Ancient societies likely followed a number of different urban settlement patterns.

2. 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. Although composed of very similar societies, Mesopotamian city-states were also characterized by conflicts among elites over trade, territory, and resources.
B. City-states that shared a common language, status symbols, and economic systems were more likely to compete militarily than were other city-states.
C. Most military conflicts among Mesopotamian city-states were about economic issues, such as territory or trade routes, but some were over the status symbols of elites.
D. Despite the military control of elites, Mesopotamian city-states tended to compete with each other.

3. The author mentions Ancient Sumer as an example of
A. an unusual settlement that differed from the classic city-state
B. a small farming village under the control of a large city
C. a city-state consisting of a capital and outlying settlements
D. a city-state that was particularly small in size for Mesopotamia

4. According to paragraph 3, what determined the size of an urban center in ancient Mesopotamia
A. The number of people defending it
B. The amount of available space between the city and its nearest neighbor
C. The extent of its political and economic enforcement power over its neighbors
D. The number of farmers and the amount of food they produced

5. The word “remnants” in the passage is closest in meaning to
A. remains
B. locations
C. number
D. existence

6. According to paragraph 4, which of the following is NOT true of commercial activity in ancient Mesopotamia
A. Perhaps 20 percent of the population was involved in commercial activity rather than food production.
B. Commercial exchanges took place not only between urban and rural areas, but also between cities.
C. Although most urban centers had marketplaces, the largest ones were located in southern Mesopotamia.
D. Goods were plentiful and widely available to inhabitants of Mesopotamian cities.

7. The word “exotic” in the passage is closest in meaning to
A. high-quality
B. popular
C. diverse
D. foreign

8. The word “dominate” in the passage is closest in meaning to
A. enclose
B. control
C. protect
D. acquire

9. In paragraph 5, why does the author provide the information that all Egyptian villages and towns were located near the Nile and had equal access to the river.
A. To explain why flooding was a frequent problem for the Egyptian people
B. To identify a contributing cause of the dispersal of Egypt's population
C. To support the claim that Egypt had well-defined borders
D. To demonstrate the similarity between Egyptian and Mesopotamian settlement patterns

10. According to paragraph 5, the primary purpose of city walls in ancient Egypt was to
A. distinguish territorial capitals from other urban areas
B. prevent the city's population from becoming too spread out
C. protect the city from outside attack
D. separate parts of the city designated for different uses

11. Paragraph 6 suggests that Egypt's urban centers were located near stream beds called wadis because these areas
A. had the most fertile soil
B. provided opportunities for trade
C. had increased their water supplies

D. could easily be protected from invaders

12. The phrase “contemporary societies” in the passage means societies that
A. existed at the same time
B. were located in the same region
C. were the same size
D. had the same resources

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

For example, Egypt's capital, Memphis, was located at a strategic point near the mouth of the Nile and grew to be one of the largest settlements of its time.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Mesopotamia was characterized by large, densely-populated urban centers, while the population of Egypt was more evenly distributed across the Nile valley.
B. Unlike Mesopotamian city-states, which were culturally and economically distinct, Egyptian villages and towns shared a common language and economy.
C. While defense was crucial in Mesopotamian cities due to competition for territory, trade routes, and raw materials, it was less important in Egypt.
D. Once they realized that craft production was more profitable than crop production, many Mesopotamians moved from rural to urban areas.
E. Differences in settlement patterns help to explain why the Egyptian central government survived and the Mesopotamian city-states did not.
F. Trade specialists were evenly spread throughout Egypt, while Mesopotamia's vibrant commercial trade was concentrated in its large urban centers.

Passage 32

The Origins of Writing

1 It was in Egypt and Mesopotamia (modern-day Iraq) that civilization arose, and it is there that we find the earliest examples of the key feature of civilization, writing. These examples, in the form of inscribed clay tablets that date to shortly before 3000 B.C.E., have been discovered among the archaeological remains of the Sumerians, a gifted people settled in southern Mesopotamia.

2 The Egyptians were not far behind in developing writing, but we cannot follow the history of their writing in detail because they used a perishable writing material. In ancient times the banks of the Nile were lined with papyrus plants, and from the papyrus reeds the Egyptians made a form of paper, it was excellent in quality but, like any paper, fragile. Mesopotamia's rivers boasted no such useful reeds, but its land did provide good clay, and as a consequence the clay tablet became the standard material. Though clumsy and bulky it has a virtue dear to archaeologists: it is durable. Fire, for example, which is death to papyrus paper or other writing materials such as leather and wood, simply bakes it hard, thereby making it even more durable. So when a conqueror set a Mesopotamian palace ablaze, he helped ensure the survival of any clay tablets in it. Clay, moreover, is cheap, and forming it into tablets is easy, factors that helped the clay tablet become the preferred writing material not only throughout Mesopotamia but far outside it as well, in Syria, Asia Minor, Persia, and even for a while in Crete and Greece. Excavators have unearthed clay tablets in all these lands. In the Near East they remained in use for more than two and a half millennia, and in certain areas they lasted down to the beginning of the common era until finally yielding, once and for all, to more convenient alternatives.

3 The Sumerians perfected a style of writing suited to clay. This script consists of simple shapes, basically just wedge shapes and lines that could easily be incised in soft clay with a reed or wooden stylus; scholars have dubbed it cuneiform from the wedge-shaped marks (cunei in Latin) that are its hallmark. Although the ingredients are merely wedges and lines, there are hundreds of combinations of these basic forms that stand for different sounds or words. Learning these complex signs required long training and much practice, inevitably, literacy was largely limited to a small professional class, the scribes.

4 The Akkadians conquered the Sumerians around the middle of the third millennium B.C.E., and they took over the various cuneiform signs used for writing Sumerian and gave them sound and word values that fit their own language. ■The Babylonians and Assyrians did the same, and so did peoples in Syria and Asia Minor. ■The literature of the Sumerians was treasured throughout the Near East, and long after Sumerian ceased to be spoken, the Babylonians and Assyrians and others kept it alive as a literary language, the way Europeans kept Latin alive after the fall of Rome. ■For the scribes of these non-Sumerian languages, training was doubly demanding since they had to know the values of the various cuneiform signs for Sumerian as well as their own language. ■

5 The contents of the earliest clay tablets are simple notations of numbers of commodities—animals, jars,

baskets, etc. Writing, it would appear, started as a primitive form of bookkeeping. Its use soon widened to document the multitudinous things and acts that are involved in daily life, from simple inventories of commodities to complicated governmental rules and regulations.

6 Archaeologists frequently find clay tablets in batches. The batches, some of which contain thousands of tablets, consist for the most part of documents of the types just mentioned: bills, deliveries, receipts, inventories, loans, marriage contracts, divorce settlements, court judgments, and so on. These records of factual matters were kept in storage to be available for reference—they were, in effect, files, or, to use the term preferred by specialists in the ancient Near East, archives. Now and then these files include pieces of writing that are of a distinctly different order, writings that do not merely record some matter of fact but involve creative intellectual activity. They range from simple textbook material to literature—and they make an appearance very clearly, even from the third millennium B.C.E.

1. The word "key" in the passage is closest in meaning to
A. frequent
B. essential
C. original
D. familiar

2. The word "virtue" in the passage is closest in meaning to
A. price
B. design
C. desirable quality
D. physical characteristic

3. 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. In part because of its low cost and ease of use, clay became the preferred writing material throughout Mesopotamia and well beyond it.
B. Clay was cheap throughout Mesopotamia, so clay tablets from Mesopotamia became the preferred writing material as far as the Mediterranean.
C. For a while, the clay tablet was the preferred writing material in Crete and Greece.
D. Moreover, because clay was used as the writing material of choice in Mesopotamia, Syria, Asia Minor, Persia, and the Mediterranean, it was cheap and popular.

4. What can be inferred from paragraph 2 about clay as a writing material?
A. It had to be baked before it could be written on.
B. Its good points outweighed its bad points.
C. Its durability was its most important feature for its users.
D. It was not available in Egypt.

5. In paragraph 2, why does the author discuss the Egyptian use of papyrus as a writing material?
A. To describe the superiority of papyrus over leather and wood as a writing material

B. To explain why writing in Egypt did not develop as quickly as it did Mesopotamia
C. To explain why archaeologists' knowledge of the early history of writing relies mainly on Sumerian cuneiform
D. To explain why the Sumerians preferred clay tablets for writing over papyrus

6. According to paragraph 3, all of the following are true of cuneiform writing EXCEPT:
A. It was composed of very simple shapes.
B. It was perfected by the ancient Sumerians.
C. It influenced the choice of material on which it was written.
D. It was understood by very few Sumerians.

7. According to paragraph 4, how did the Akkadians use the Sumerian language?
A. They used Sumerian for speaking but used their own national language for writing.
B. They used the complex cuneiform signs developed by the Babylonians and Assyrians rather than the Sumerian signs.
C. They developed their own cuneiform shapes on clay tablets to replace those used by the Sumerians.
D. They assigned new sound and word values to the signs of Sumerian cuneiform.

8. Paragraph 4 answers all the following questions about Sumerian writing in the period after the Sumerians were conquered EXCEPT:
A. Did Sumerian literature continue to be read?
B. Did Sumerian continue to be spoken?
C. Did scribes compose new texts in Sumerian?
D. Did Sumerian have the same fate as Latin had after the fall of Rome?

9. The word "document" in the passage is closest in meaning to
A. include
B. influence
C. organize
D. record

10. According to paragraph 5, writing was first used for
A. simple bookkeeping
B. descriptions of daily events
C. counting the contents of clay tablets
D. government reports

11. The phrase "now and then" in the passage is closest in meaning to
A. always
B. occasionally
C. sooner or later
D. first and last

12. According to paragraph 6, large batches of clay writing tablets were stored because the tablets
A. were being produced quickly and in large quantities
B. did not serve any practical purpose for most Mesopotamians
C. contained information that needed to be available for future reference
D. could not be used again once they had been written on

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

However, the Sumerian language did not entirely disappear.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. Writing was invented in the same areas in which civilization began by the ancient civilization of Mesopotamia, Asia Minor and the Mediterranean.
B. The development of cuneiform is known because it was written on a long-lasting material and because it was long and widely used throughout the ancient Near East.
C. Cuneiform tablets generally dealt with business and factual matters, but other topics, including literature, were also recorded and valued.
D. Writing was developed first by the Sumerians using wedge-shaped marks (cuneiform) on clay tablets and then by the Egyptians using papyrus paper.
E. Scribes using cuneiform in Assyria, Babylon, Syria and Asia Minor had to learn all the languages that used the cuneiform script.
F. Batches of clay tablets, sometimes with as many as a thousand tablets each, are often found by archaeologists.

Passage 33

Early Theories of Continental Drift

1 The idea that the past geography of Earth was different from today is not new. The earliest maps showing the east coast of South America and the west coast of Africa probably provided people with the first evidence that continents may have once been joined together, then broken apart and moved to their present positions.

2 During the late nineteenth century, Austrian geologist Eduard Suess noted the similarities between the Late Paleozoic plant fossils of India, Australia, South Africa, and South America. The plant fossils comprise a unique group of plants that occurs in coal layers just above the glacial deposits on these southern continents. In this book The Face of the Earth (1885), he proposed the name "Gondwanaland" (called Gondwana here) for a supercontinent composed of the aforementioned southern landmasses. Suess thought these southern continents were connected by land bridges over which plants and animals migrated. Thus, in his view, the similarities of fossils on these continents were due to the appearance and disappearance of the connecting land bridges.

3 The American geologist Frank Taylor published a pamphlet in 1910 presenting his own theory of continental drift. He explained the formation of mountain ranges as a result of the lateral movements of continents. He also envisioned the present-day continents as parts of larger polar continents that eventually broke apart and migrated toward equator after Earth's rotation was supposedly slowed by gigantic tidal forces. According to Taylor, these tidal forces were generated when Earth's gravity captured the Moon about 100 million years ago. Although we know that Taylor 's explanation of continental drift is incorrect, one of his most significant contributions was his suggestion that the Mid-Atlantic Ridge—an underwater mountain chain discovered by the 1872-1876 British HMS Challenger expeditions—might mark the site at which an ancient continent broke apart, forming the present –day Atlantic Ocean.

4 However, it is Alfred Wegener, a German meteorologist, who is generally credited with developing the hypothesis of continental drift. In his monumental book, The Origin of Continents and Oceans (1915), Wegener proposed that all landmasses were originally united into a single supercontinent that he named "Pangaea." Wegner portrayed his grand concept of continental movement in a series of maps showing the breakup of Pangaea and the movement of various continents to their present-day locations. What evidence did Wegener use to support his hypothesis of continental drift? First, Wegener noted that the shorelines of continents fit together, forming a large supercontinent and that marine, nonmarine, and glacial rock sequences of Pennsylvanian to Jurassic ages are almost identical for all Gondwana continents, strongly indicating that they were joined together at one time. Furthermore, mountain ranges and glacial deposits seem to match up in such a way that suggests continents could have once been a single landmass. And last, many of the same extinct plant and animal groups are found today on widely separated continents, indicating that the continents must have been in proximity at one time. Wegener argued that this vast amount of evidence from a variety of sources surely indicated the continents must have been close

together at one time in the past.

5 Alexander Du Toit, a South African geologist was one of Wegener's ardent supporters. ■ He noted that fossils of the Permian freshwater reptile "Mesosaurus" occur in rocks of the same age in both Brazil and South Africa. ■ Because the physiology of freshwater and marine animals is completely different, it is hard to imagine how a freshwater reptile could have swum across the Atlantic Ocean and then found a freshwater environment nearly identical to its former habitat. ■ Furthermore, if Mesosaurus could have swum across the ocean, its fossil remains should occur in other localities besides Brazil and South Africa. ■ It is more logical to assume that Mesosaurus lived in lakes in what are now adjacent areas of South America and Africa but were then united in a single continent.

6 Despite what seemed to be overwhelming evidence presented Wegener and later Du Toit and others, most geologists at the time refused to entertain the idea that the continents might have moved in the past.

1. According to paragraph 2, Eduard Suess believed that similarities of plant and animal fossils on the southern continents were due to
A. living in the southern climate
B. crossing the land bridges
C. fossilization in the coal layers
D. movements of the supercontinent

2. According to paragraph 3, Frank Taylor believed that
A. present-day continents broke off from larger continents and drifted toward the poles due to tidal forces
B. the lateral shifting of continents caused the formation of mountain ranges
C. polar continents began to join together when Earth's gravity captured the Moon 100 million years ago
D. Earth's gravity and speed of rotation created large polar continents

3. Which of the following can be inferred from paragraph 3 about the Mid-Atlantic Ridge?
A. It was once above sea level.
B. It formed at the same time that Earth's gravity captured the Moon.
C. It was much more extensive when it was first formed than it is today.
D. It was unknown before the HMS Challenger voyages.

4. The word "generated" in the passage is closest in meaning to
A. strengthened
B. released
C. produced
D. present

5. The word "monumental" in the passage is closest in meaning to
A. final
B. persuasive
C. well-known

D. great and significant

6. The word “portrayed” in the passage is closest in meaning to
A. proved
B. formed
C. depicted
D. defended

7. The word “vast” in the passage is closest in meaning to
A. enormous
B. significant
C. convincing
D. additional

8. According to paragraph 4, Wegener felt confident that his theory are correct in part because
A. contemporary scientists were unable to successfully challenge his evidence
B. many different types of evidence seemed to support his theory
C. his theory accounted for phenomena that earlier theories could not explain
D. he had used the most advanced techniques available to gather his evidence

9. According to paragraph 4, Wegener pointed to all of the following in support of his theory of continental drift EXCEPT:
A. Plants and animals now living on some continents appear to be descended from plants and animals that originated on other continents.
B. Rock sequences associated with the continents are extremely similar.
C. The coastlines of some continents seem to fit together.
D. Mountains on some continents would be adjacent to mountains on other continents if these continents were joined.

10. Why does the author mention the fact that “the physiology of freshwater and marine animals is completely different”?
A. To explain why Du Toit was able to determine that Mesosaurus was a freshwater reptile
B. To explain why Du Toit concluded that certain fossils in rocks in Brazil and South Africa were those of the same animal
C. To cast doubt on the idea that Mesosaurus could have swum from one landmass to another
D. To show Du Toit determined which landmass Mesosaurus originated on

11. The word “logical” in the passage is closest in meaning to
A. satisfactory
B. modern
C. reasonable
D. popular

12. Which of the following can be inferred from paragraph 5 about the Permian Mesosaurus of Brazil and South Africa?

A. It was the dominant animal in the habitats in which it lived
B. It lived in similar environments in both places.
C. It was a weak swimmer compared with other freshwater reptiles.
D. Its physiology differed from that of modern freshwater reptiles.

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

In addition to supplying new geological evidence for continental drift, he crafted convincing arguments based on ancient life forms.

Where would the sentence best fit?

14. Directions: An introductory sentence for a brief summary of the passage is provides below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Several theories involving the movement of continents were proposed in the nineteenth and early twentieth centuries

Answer Choices

A. Early maps showing the coastlines of South America and Africa inspired Eduard Suess to search for fossil evidence that today's southern continents had once been joined in a single landmass.
B. To Eduard Suess, continental drift accounted for the presence of the same types of fossils on different continents that had at times been connected by land bridges.
C. Du Toit's study of the freshwater reptile Mesosaurus added to the already considerable body of evidence that Alfred Wegener had gathered in support of the idea of continental drift.
D. Frank Taylor expanded on Eduard Suess's theory of continental drift by arguing that tidal forces 100 million years ago had broken continents apart and caused the rise of the Mid-Atlantic Ridge.
E. Alfred Wegener, who first developed the theory of continental drift argued that all landmasses were originally part of a supercontinent that broke up into separate continents.
F. Early theories of continental drift were not widely accepted at the time because they failed to explain why continents moved.

Passage 34

The Origin of Earth's Atmosphere

1 In order to understand the origin of Earth's atmosphere, we must go back to the earliest days of the solar system, before the planets themselves were formed from a disk of rocky material spinning around the young Sun. This material gradually coalesced into lumps called planetesimals as gravity and chance smashed smaller pieces together, a chaotic and violent process that became more so as planetesimals grew in size and gravitational pull. Within each orbit, collisions between planetesimals generated immense heat and energy. How violent these processes were is suggested by the odd tilt and spin of many of the planets, which indicate that each of the planets was, like a billiard ball, struck at some stage by another large body of some kind. Visual evidence of these processes can be seen by looking at the Moon. Because the Moon has no atmosphere, its surface is not subject to erosion, so it retains the marks of its early history. Its face is deeply scarred by millions of meteoric impacts, as you can see on a clear night with a pair of binoculars. The early Earth did not have much of an atmosphere. Before it grew to full size, its gravitational pull was insufficient to prevent gases from drifting off into space, while the solar wind (the great stream of atomic particles emitted from the Sun) had already driven away much of the gaseous material from the inner orbits of the solar system. So we must imagine the early Earth as a mixture of rocky materials, metals, and trapped gases, subject to constant bombardment by smaller planetesimals and without much of an atmosphere.

2 As it began to reach full size, Earth heated up, partly because of collisions with other planetesimals and partly because of increasing internal pressures as it grew in size. In addition, the early Earth contained abundant radioactive materials, also a source of heat. As Earth heated up, its interior melted. Within the molten interior, under the influence of gravity, different elements were sorted out by density. By about 40 million years after the formation of the solar system, most of the heavier metallic elements in the early Earth, such as iron and nickel, had sunk through the hot sludge to the center, giving Earth a core dominated by iron.This metallic core gives Earth its characteristic magnetic field, which has played an extremely important role in the history of our planet.

3 As heavy materials headed for the center of Earth, lighter silicates (such as the mineral quartz) drifted upward. The denser silicates formed Earth's mantle, a region almost 3,000 kilometers thick between the core and the crust. With the help of bombardment by comets, whose many impacts scarred and heated Earth's surface, the lightest silicates rose to Earth's surface, where they cooled more rapidly than the better-insulated materials in Earth's interior.

4 These lighter materials, such as the rocks we call granites, formed a layer of continental crust about 35 kilometers thick. Relative to Earth as a whole, this is as thin as an eggshell. Seafloor crust is even thinner, at about 7 kilometers; thus, even continental crust reaches only about 1/200th of the way to Earth's core. Much of the early continental crust has remained on Earth's surface to the present day.

5 The lightest materials of all, including gases such as hydrogen and helium, bubbled through Earth's interior to the surface. So we can imagine the surface of the early Earth as a massive volcanic field. And we can judge pretty well what gases bubbled up to that surface by analyzing the mixture of gases emitted by volcanoes. These include hydrogen, helium, methane, water vapor, nitrogen, ammonia, and hydrogen sulfide. Other materials, including large amounts of water vapor, were brought in by cometary bombardments. Much of the hydrogen and helium escaped; but once Earth was fully formed, it was large enough for its gravitational field to hold most of the remaining gases, and these formed Earth's first stable atmosphere.

1. The word “chaotic” in the passage is closest in meaning to
A. rapid
B. disorganized
C. intense
D. long-lasting

2. All of the following are true of the planetesimals mentioned in paragraph 1 EXCEPT:
A. They were formed of rocky material spinning around the early Sun.
B. They collided violently with each other.
C. They gradually grew in size.
D. They lost their atmospheres as they were hit by larger bodies.

3. The word “retains” in the passage is closest in meaning to
A. reveals
B. acquires
C. hides
D. preserves

4. The author discusses the Moon in paragraph 1 in order to
A. help explain why Earth had fewer meteoric impacts than other planets in the solar system
B. show why it is difficult to understand how the first planetary atmospheres developed
C. help explain the processes that took place in the formation of large planetary bodies in the solar system
D. illustrate why the Moon's spin and tilt are unique among other planetary bodies in the solar system

5. The word “constant” in the passage is closest in meaning to
A. considerable
B. unpredictable
C. continual
D. violent

6. Paragraph 3 answers which of the following questions about early Earth
A. What caused materials on Earth to become radioactive
B. What percentage of Earth's core was nickel
C. What internal pressures caused Earth to heat up as it grew in size

D. What caused Earth's magnetic field

7. According to paragraph 3, Earth's core is mostly iron because, compared to most other elements on early Earth, iron
A. was denser
B. melted more easily
C. was more radioactive
D. was more plentiful

8. Select the TWO answer choices that, according to paragraph 4, indicate true statements about Earth's formation. To obtain credit, you must select TWO answer choices.
A. Comets hitting Earth helped the lightest silicates to reach Earth's surface.
B. Silicates such as mineral quartz drifted downward and mixed with denser materials as they reached Earth's core.
C. When Earth's mantle became approximately 3,000 kilometers thick, the heaviest materials in it began to cool.
D. Lighter materials reaching Earth's surface formed Earth's continental crust.

9. According to paragraph 4, Earth's continental crust
A. has changed significantly in composition over time
B. was as thick as Earth's mantle in its early stages
C. is very thin relative to Earth's size
D. caused the temperatures of Earth's early core and mantle to gradually increase

10. The word “coalesced” in the passage is closest in meaning to
A. collided
B. joined
C. changed
D. shrank

11. The word “emitted” in the passage is closest in meaning to
A. released
B. consumed
C. contained
D. heated

12. What can be inferred from paragraph 5 about Earth's first stable atmosphere
A. It existed before Earth was yet fully formed.
B. It contained very little hydrogen and helium.
C. It contained only materials that had bubbled up through Earth's surface.
D. It lacked water vapor.

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

Even some of its oldest portions as old as 3.8 billion years can still be found in parts of Canada, Australia, South Africa, and Greenland.

Where would the sentence best fit Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. Early Earth's lack of an atmosphere explains why it was bombarded with much more frequency and violence than other planetesimals.
B. Continued bombardments and internal pressures made the growing Earth hotter, causing its interior to melt and the heavier elements to sink and form Earth's core.
C. Lighter elements from Earth's interior rose and formed the mantle, a denser layer of silicates around the core, and the crust, a thinner layer of silicates at Earth's surface.
D. The formation of Earth's crust protected the inner layers of Earth from the high-energy particles in space, reducing the temperatures of the mantle and the core.
E. Once Earth had gone through the final stages of its formation, gases bubbled to the surface and were held by Earth's gravitational field to form the atmosphere.
F. Volcanoes today are the result of gases that were trapped in Earth's interior during the planet's early stages of formation.

Passage 35

Attempts at Determining Earth's Age

1 Since the dawn of civilization, people have been curious about the age of Earth. In addition, we have not been satisfied in being able to sate merely the relative geologic age of a rock or fossil. Human curiosity demands that we know actual age in years.

2 Geologists working during the nineteenth century understood rock bodies, they would have to concentrate on natural processes that continue at a constant rate and that also leave some sort of tangible record in the rocks. Evolution is one such process, and geologist Charles Lyell (1797-1875) recognized this. ■ By comparing the amount of evolution exhibited by marine mollusks then, Lyell estimated that 80 million years had elapsed since the beginning of the Tertiary Period. He came astonishingly close to the mark, since it was actually about 65 million years. ■ However, for older sequence of evolutionary development, estimates based on parts in the fossil record. ■ Rates of evolution for many orders of plants and animals were not well understood. ■

3 In another attempt, geologists reasoned that if rates of deposition could be determined for sedimentary rocks, they might be able to estimate the time required for deposition of a given thickness of strata, or rock layers. Similar reasoning suggested that one could estimate total elapsed geologic time by dividing the average thickness of sediment transported annually to the oceans into the total thickness of sedimentary rock that had ever been deposited in the past. Unfortunately, such estimates did not adequately account for past difference in rates of sedimentation or losses to the total section of strata during episodes of erosion. Also, some very ancient sediments were no longer recognizable, having been converted to igneous and metamorphic rocks in the course of mountain building. Estimates of Earth's total age based on sedimentation rates ranged from as little as million to over a billion year.

4 Yet another scheme for approximating Earth's age had been proposed in 1715 by Sir Edmund Halley (1656-1742), whose name we associate with the famous comet. Halley surmised that the ocean formed soon after the origin of the planet and therefore would be only slightly younger that the age of the solid Earth. He reasoned that the original ocean was not salty and that subsequently salt derived from the weathering of rocks was brought to the sea by streams. Thus, if one knew the total amount of salt dissolved in the ocean and the amount added each year, it might be possible to calculate the ocean's age in 1899, Irish geologist John Joly (1857-1933) attempted the calculation. From information provided by gauges placed at the mouths of streams, Joly was able to estimate the annual increment of salt to the oceans. Then, knowing the salinity of ocean water and the approximate volume of water, he calculated the amount of salt already held in solution in the oceans. An estimate of the age of the ocean was obtained by diving the total salt in the ocean by the rate of salt added each year. Beginning with essentially non-saline oceans, it would have taken about 90 million years of the oceans to reach their present salinity, according to Joly. The figure, however, was off the currently accepted mark of 4.54 billion by a factor of 50, largely because there was no way to account accurately by recycled salt and salt incorporated into clay mineral deposited

on the sea floors. Even though in error, Joly's calculations clearly supported those geologists who insisted on an age for Earth far in excess of a few million years. The belief in Earth's immense antiquity was also supported by Darwin, Huxley, and other evolutionary biologists, who saw the need for time in the hundreds of millions of years to accomplish the organic evolution apparent in the fossil record.

1. The word "tangible" in the passage is closest in meaning to
A. physical
B. related
C. significant
D. helpful

2. It can be inferred form paragraph 2 that Charles Lyell based his study of the marine mollusk fossils on which of the following assumptions?
A. The Tertiary Period was separated into division of time that were equal in length.
B. Mollusks lived under rocks in the sea during the Tertiary period.
C. Evolution of mollusks proceeded at a uniform rate over time
D. Mollusks have evolved less rapidly with the passing of time

3. The word "sequence" in the passage is closet in meaning to
A. observations
B. senses
C. series
D. categories

4. According to paragraph 2, Lyell's strategy for estimation geologic dates was not very accurate for periods before the Tertiary Period party because
A. Marine mollusks did not evolve until the Tertiary Period
B. fossil records of the very distant past are incomplete
C. there was not much agreement about how to identify or categorize earlier eras
D. the duration of previous geologic periods was difficult to determine

5. The phrase "another attempt" in the passage refers to
A. trying to understand the fossil record
B. trying to determine the evolutionary rate of marine mollusks
C. trying to understand natural processes
D. trying to determine Earth's actual age

6. The world "converted" in the passage is closest in meaning to
A. added
B. changed
C. restored
D. reduced

7. According to paragraph 3, all of the following were problems with the calculation of Earth's age using the study of sedimentary rocks EXCEPT
A. the inconsistency of sedimentation rates over time
B. the effect of geologic process on sedimentary rock
C. the expansion of some sedimentary rocks due to Earth's internal heat
D. the loss of an unknown number of sedimentary layers due to erosion

8. The world "approximating" in the passage is closest in meaning to
A. thinking about
B. researching
C. estimating
D. demonstrating

9. The word "subsequently" in the passage is closest in meaning to
A. later
B. furthermore
C. evidently
D. accidentally

10. According to paragraph 4, John Joly's calculations were founded on all the following EXCEPT
A. knowing how salty the ocean water is
B. estimating how much salt enters the ocean each year
C. accounting for the amount of salt that is recycled
D. figuring the volume of water contained in the ocean

11. According to paragraph 4, in which of the following ways could Joly's estimate of Earth's age be considered significant?
A. It proved that Halley's idea about the age of the ocean was fairly accurate.
B. It indicated that Earth was much older than some scientists had claimed.
C. It was favored by the majority of scientists at the end of the nineteenth century
D. It was the basis for much modern research into the salinity of the ocean

12. The author mentions "Darwin, Huxley, and other evolutionary biologists" in order to
A. Provide evidence that Joly's calculations inspired scientists working on other lines of scientific inquiry
B. Support the claim that all of the leading scientists of the time believed that Earth was just over 90 million years old
C. Argue that Joly's calculations would have been more exact if he had collaborated with experts in other fields
D. Provide examples of scientists who believed the age of Earth to be greater than just a few million on year, like Joly, in order to account for their findings

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

More fundamentally, Lyell's evolutionary approach is intrinsically limited because Earth existed long before life and evolution began.

Where would the sentence best fit?

14. Directions：An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.

Since the dawn of civilization, people have been curious about Earth's age.

Answer choices

A. It was not until the nineteenth century that attempts were made to determine the relative geologic age of rocks and fossils.

B. Charles Lyell made a good estimate of the Tertiary Period from the fossil record, but his method could not be extended to earlier geological periods.

C. Attempts were made to calculate Earth's age from the thickness of surviving sedimentary rock and from the current level of the oceans' salinity.

D. In the nineteenth century, scientists made a number of important, but unsuccessful, attempts to calculate Earth's age from the record of various natural processes.

E. Darwin and Huxley supported the accuracy of John Joly's Calculation of Earth's age because it agree with their view of how long evolution had been in progress.

F. Earth's true age, 4.54 billion years, was determined by combining data from the geological and fossil records.

Passage 36

Earthquake Prediction

1 Accurate prediction of earthquakes is not currently possible, although intensive research is proceeding in many areas.

2 Two types of earthquake prediction are theoretically possible. The first type is long-term forecasting, in which the probability of an earthquake along a particular segment of a within a certain time interval is calculated by studying seismic gaps and historical records of earthquakes that have occurred along that fault segment. By plotting the number of earthquakes within specific time intervals against their magnitudes, diagrams can be constructed for a local area. From this plot it is possible to determine the recurrence interval, or the average time interval between earthquakes of a specific magnitude. Predictions can then be made that an earthquake of that magnitude has a high probability of occurrence within a specified time interval, if the date of the last earthquake is known.

3 Research leading to short-term forecasting, which involves a shorter time interval, has been focused on precursors observed prior to previous earthquakes. Precursors are physical or chemical phenomena that occur in a typical pattern before an earthquake. These phenomena include changes in the velocity of seismic waves, the electrical resistance of rocks, the frequency of the usually minor preliminary earthquakes (foreshocks), the deformation of the land surface, and the water level or water chemistry of wells in the area. Many of these precursors can be explained by a theory called the dilatancy model. Under this hypothesis, rocks in the process of strain along a fault show significant dilation or swelling before rupture.

4 This volume increase is caused by the opening of microcracks, which are minute failure zones in weaker mineral grains in the rock and along grain boundaries. Groundwater flows into the highly stressed areas during the formation of microcracks. These changes in density and water content affect the ability of the rock to transmit seismic waves and conduct electricity. Therefore, seismic-wave velocity and electrical resistance progressively change as the overall rupture along the fault draws near. Localized changes in land-surface elevation are also related to volume changes at depth. An area of recent uplift along the San Andreas Fault near Los Angeles, which has been named the Palmdale Bulge, is being monitored in great detail as a possible indicator of a future earthquake.

5 Volume changes and groundwater movement may be reflected by changes in water levels in wells and also by changes in the chemical composition of groundwater. Radon gas has been observed to increase in wells prior to earthquakes. These increases are perhaps related to the release of radon gas from rocks during the formation of microcracks. The pattern of seismic activity is also significant in the vicinity of a fault area where rupture is imminent. This pattern consists of an initial rise in the number of small events, followed by a decline in foreshocks just prior to the major earthquake. The decline may represent a temporary increase in rock strength before the newly formed microcracks are filled with water.

6 The precursor phenomena can be grouped into stages according to the dilatancy model. Stage I consists of a gradual stress buildup along the fault. Stages II and III are correlated with dilatancy and water influx. Stage IV is the major earthquake, and stage V is the aftermath of the event. If every earthquake followed the sequence with uniform stage duration, earthquake prediction would be a simple matter. ■ Instead of following the same patterns, each earthquake is unique in terms of specific precursor behavior patterns and length of precursor stages. A magnitude 6.9 North American earthquake in 1989 was preceded by a substantially smaller magnitude 5 earthquake fifteen months before the event. ■ Another foreshock of similar size occurred two months before the event. ■ In each case, a public advisory was issued stating that those smaller earthquakes could be foreshocks to a stronger earthquake within five days. However, the fault did not cooperate, and those predictions were not successful. ■ Continued research and study of future earthquakes will certainly lead to refinement of the dilatancy model or to a replacement model with more accurate predictive capabilities.

1. The word “specified” in the passage is closest in meaning to
A. probable
B. stated
C. short
D. typical

2. According to paragraph 2, all of the following information is used in the process of long-term earthquake prediction EXCEPT the
A. analysis of seismic gaps
B. record of past earthquakes in the fault area
C. date of the last recorded earthquake in the area
D. pattern of earthquake activity in other nearby fault segments

3. According to paragraph 2, long-term forecasting can be used to predict which of the following
A. The influence of earthquake activity in one segment of the fault area on other segments
B. The frequency with which earthquakes of a certain size will occur
C. The possible date of the next earthquake
D. The magnitude of the next earthquake

4. The word “focused” in the passage is closest in meaning to
A. dependent
B. funded
C. concentrated
D. published

5. Paragraph 3 mentions all of the following as examples of precursors EXCEPT
A. changes in the speed of seismic waves
B. changes in the availability of electricity
C. changes in the frequency of foreshocks

D. changes in land surfaces

6. According to the dilatancy model, what happens to rocks shortly before an earthquake
A. They lose significant amounts of moisture.
B. They show signs of expanding.
C. They move downward at great speed.
D. They increase in temperature.

7. According to paragraph 4, the groundwater that flows into microcracks before an earthquake causes
A. changes in seismic waves and electrical activity
B. increases in the mineral content of rocks
C. the disappearance of grain boundaries in rocks
D. a release in the tension of highly stressed areas of rocks

8. The author discusses the San Andreas Fault near Los Angeles in order to
A. contrast past and future patterns of earthquake activity in the area
B. give an example of an area where underground earthquake activity is apparent from land changes above the ground
C. explain why recent earthquake predictions have increased accuracy
D. suggest that some areas of earthquake activity are easier to monitor than others

9. According to paragraph 5, which of the following occurs just before an earthquake
A. The chemical content of groundwater drops.
B. The rocks weaken as they fill with water.
C. Seismic activity decreases.
D. Radon gas causes microcracks to form.

10. The word “imminent” in the passage is closest in meaning to
A. frequent
B. well understood
C. known to occur
D. about to happen

11. How is paragraph 6 organized
A. The sequence of earthquake stages is given, and the effect of variable stage length on earthquake prediction is explained.
B. The earthquake stages are named, and the most important stage is illustrated with a specific earthquake event.
C. The sequence of earthquake stages is given, and evidence is presented that the intervals between stages are roughly equal in length.
D. The earthquake stages are first named, and each is then described in greater detail.

12. The word “refinement” in the passage is closest in meaning to

A. reconsideration
B. acceptance
C. improvement
D. extension

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

But the reality of earthquake forecasting is considerably more complex.

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. Short-term forecasting has been used more widely than long-term forecasting in the prediction of earthquakes.
B. Long-term forecasting of earthquakes uses data on past seismic activity to determine the likelihood that an earthquake will occur in a certain area within a certain time period.
C. Short-term forecasting research has studied earthquake precursors such as volume increases in rocks and unusual movements in underground water that occur shortly before an earthquake takes place.
D. The dilatancy model has been used to successfully forecast some recent earthquakes.
E. Attempts to improve forecasting by using five stages of earthquake predictors have been unsuccessful because each earthquake has unique precursor patterns and durations.
F. The magnitude 6.9 North American earthquake in 1989 was not successfully predicted because the many foreshocks before the event were too small to measure.

Passage 37

Architectural Change in Eighth-Century Japan

1 Japanese construction techniques and architectural styles changed in the eighth century C.E. from more traditional Japanese models to imported continental (especially Chinese) models. Several factors contributed to this, in particular with respect to the creation of two new capital cities. In essence, changes then occurring in Japanese political life were rendering past arrangements for the rulers' headquarters obsolete, and continental models offered an alternative.

2 To elaborate, before the eighth century, the elite marriage practice, which was an important instrument of political alliance making, had encouraged rulers to maintain multiple palaces: that of their own family and those of their spouses, who commonly remained at or near their native family headquarters, at least for some years after marriage. These arrangements had the effect of encouraging frequent changes in royal residence as children matured and marriage alliances changed. The customs of multiple palaces and a moveable court were feasible as long as a ruling group was modest in size and its architectural practices relatively simple.

3 Moreover, because buildings using the traditional construction of thatched roofs and wooden poles placed directly in the ground rotted away in two decades or so, periodic replacement of palaces, shrines, warehouses, gate towers, and fortress walls was essential. The custom of residential mobility was thus not especially wasteful of labor and material resources: when the time came, one simply erected a new building at a new site—reusing valuable timbers as appropriate—and burned the rest. The practical necessity of replacement was given religious sanction because the regular replacement of buildings was regarded as necessary to provide spiritual cleansing of the site.

4 As rulers of the sixth and seventh centuries expanded their realm, however, they acquired more and more underlings, administrative paraphernalia, weaponry, and tribute goods, and they needed more and more buildings to house them. As the scale of government grew, moreover, it became more important to have these people and resources close at hand where they could be more easily controlled and utilized. Under these circumstances, frequent moves by the court or replacement of buildings became more costly, even prohibitive.

5 A solution to the problem was advocated by experts from the continent. This was the use of continental principles of urban design and techniques of construction. These produced geometrically laid out capital cities whose major gates and buildings employed stone foundations, mortise-and-tenon framing (a technique for attaching timbers), and tile roofs that largely eliminated the problem of rot and the consequent need for replacement.

6 One the other hand, to construct cities and buildings of that sort required so much labor and material that their use effectively precluded periodic replacement or the transfer of a royal headquarters from site to

site. Nevertheless, the notion of grand buildings and capital cities became immensely attractive to Japanese rulers during the seventh and eighth centuries. Continental regimes, the glorious new Chinese dynasties most notably, had them: they constituted an expression of political triumph, a legitimizing symbol of the first order. Moreover, the architecture was an integral part of Buddhism, and acceptance of this religion in Japan at this time fostered adoption of its building style.

7 These several conflicting factors—the need to modify palace and capital arrangements but the difficulty of doing so, the wish to enjoy grandeur but the reluctance to settle for a single, immobile court—all became evident by the mid-seventh century. ■ Change did come, but slowly, and in the end a compromise system was devised. ■ Traditional shrines of Shinto, the native religion of Japan, and many residential buildings continued to be built in the rottable, replaceable style that accommodated religious concerns and taboos, while city gates, major government buildings, and Buddhist temples were built in the continental fashion that met the need for permanence and grandeur. ■ Moreover, the wish of rulers to maintain multiple palaces fit with the custom of certain continental regimes that maintained summer palaces or other regional capitals where rulers could periodically reside on a temporary basis. ■

1. The phrase “In essence” in the passage is closet in meaning to
A. Actually
B. Basically
C. However
D. Moreover

2. 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 elaborate marriage customs of the elite encouraged spouses to remain at their family palace for several years after marriage.
B. Rulers maintained multiple palaces for themselves and their spouses’ families.
C. Before the eighth century, it was common for the elite to form political alliances with their spouses’ families at the native family headquarters for some years after marriage.
D. Before the eighth century, the practice of forming alliances through marriage encouraged rulers to maintain palaces at their spouses’ family homes as well as at their own.

3. The word “feasible” in the passage is closet in meaning to
A. practical
B. customary
C. acceptable
D. supported

4. In paragraph 3, why does the author discuss the natural decay of the wooden structures built in eighth-century Japan?
A. To argue that the necessity of replacing buildings every two decades applied to all eighth-century structures, not just residences.
B. To argue that the custom of residential mobility was not unreasonable given the building practices of the

eighth century
C. To explain why the elite of the eighth century had to move periodically to new residences
D. To explain why in the sixth and seventh centuries Japanese architectural practice changed to the construction of more permanent structures

5. According to paragraph 3, each of the following was true of the practice of periodic replacement of buildings EXCEPT:
A. It was followed for a wide variety of structures.
B. It involved the reuse of building materials that were still good.
C. Ordinary Japanese considered it as waste of time and energy.
D. Over the years it became a religious ritual.

6. The word “scale” in the passage is closet in meaning to
A. importance
B. duties
C. needs
D. size

7. According to paragraph 4, what problem did traditional architectural practices create for rulers of the sixth and seventh centuries?
A. It was difficult to bring the necessary people and construction materials together to replace buildings periodically.
B. It was very expensive to move and house the large number of people that were now associated with the government.
C. It was impractical to construct buildings large enough to house the growing numbers of people and resources.
D. It was too time-consuming for rulers to supervise the construction of all the necessary buildings.

8. The word “advocated” in the passage is closet in meaning to
A. discovered
B. solved
C. promoted
D. questioned

9. According to paragraph 6, Japanese rulers were strongly attracted to continental architecture because
A. permanent buildings could be constructed at very low cost
B. adopting the continental architecture would not have an effect on religious practices in Japan
C. political power could be expressed by constructing grand buildings
D. important buildings could be replaced quickly by means of the latest technology

10. What can be inferred from paragraph 6 about Japanese rulers during the seventh and eighth centuries?
A. They were well aware of, and strongly influenced by, developments in the royal courts of China.
B. They strongly opposed the spread of the Buddhist religion.

C. They saw the influence of continental regimes as a threat to local traditions.
D. They sought to increase their mobility by adopting changes in architecture.

11. The word “fostered” in the passage is closet in meaning to
A. quickened
B. initiated
C. determined
D. encouraged

12. Which of the following is true of the compromise system mentioned in paragraph 7?
A. Major government buildings combined the techniques of traditional and continental architecture.
B. The continuing desire of rulers to maintain multiple palaces was taken into account.
C. The balance of traditional and continental architecture was quickly achieved.
D. Shinto shrines and most residences were constructed using continental architecture.

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

Such temporary residences might have enabled Japanese rulers to better control the people living far from main capital.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Answer Choices

A. Chinese architectural styles had influenced traditional Japanese architecture long before eighth-century Japanese rulers decided to create larger cities.
B. As religious ideas changed, it no longer was acceptable to construct buildings out of materials that required constant replacement.
C. Several factors complicated the architectural change, but a compromise system that considered both traditional and practical needs was eventually developed.
D. Before the eighth century, the palaces of the elite were relatively simple structures that could be easily built, repaired, and replaced.
E. Rulers’ desire for grand palaces conflicted with the expense of having multiple courts, which they also wanted, but a compromise was achieved in the eighth century.
F. Many areas in Japan were quick to adopt the changes in architectural styles, while other areas were more reluctant.

Passage 38

Comets

1 Comets are among the most interesting and unpredictable bodies in the solar system. They are made of frozen gases (water vapor, ammonia, methane, carbon dioxide, and carbon monoxide) that hold together small pieces of rocky and metallic materials. Many comets travel in very elongated orbits that carry them far beyond Pluto. These long-period comets take hundreds of thousands of years to complete a single orbit around the Sun. However, a few short-period comets (those having an orbital period of less than 200 years), such as Halley's Comet, make a regular encounters with the inner solar system.

2 When a comet first becomes visible from Earth, it appears very small, but as it approaches the Sun, solar energy begins to vaporize the frozen gases, producing a glowing head called the coma. The size of the coma varies greatly from one comet to another. Extremely rare ones exceed the size of the Sun, but most approximate the size of Jupiter. Within the coma, a small glowing nucleus with a diameter of only a few kilometers can sometimes be detected. As comets approach the Sun, some develop a tail that extends for millions of kilometers. Despite the enormous size of their tails and comas, comets are relatively small members of the solar system.

3 The observation that the tail of a comet points away from the Sun in a slightly curved manner led early astronomers to propose that the Sun has a repulsive force that pushes the particles of the coma away, thereby forming the tail. Today, two solar forces are known to contribute to this formation. One, radiation pressure, pushes dust particles away from the coma. The second, known as solar wind, is responsible for moving the ionized gases, particularly carbon monoxide. Sometimes a single tail composed of both dust and ionized gases is produced, but often two tails—one of dust, the other, a blue streak of ionized gases—are observed.

4 As a comet moves away from the Sun, the gases forming the coma recondense, the tail disappears, and the comet returns to distant space. Material that was blown from the coma to form the tail is lost from the comet forever. Consequently, it is believed that most comets cannot survive more than a few hundred close orbits of the Sun. Once all the gases are expelled, the remaining material—a swarm of tiny metallic and stony particles—continues the orbit without a coma or a tail.

5 Comets apparently originate in two regions of the outer solar system. Most short-period comets are thought to orbit beyond Neptune in a region called the Kuiper belt, in honor of the astronomer Gerald Kuiper. During the past decade over a hundred of these icy bodies have been discovered. Most Kuiper belt comets move in nearly circular orbits that lie roughly in the same plane as the planets. A chance collision between two comets, or the gravitational influence of one of the Jovian planets—Jupiter, Saturn, Uranus, and Neptune—may occasionally alter the orbit of a comet in these regions enough to send it to the inner solar system and into our view.

6 Unlike short-period comets, long-period comets have elliptical orbits that are not confined to the plane of the solar system. These comets appear to be distributed in all directions from the Sun, forming a spherical shell around the solar system, called the Oort cloud, after the Dutch astronomer Jan Oort. Millions of comets are believed to orbit the Sun at distances greater than 10,000 times the Earth-Sun distance. The gravitational effect of a distant passing star is thought to send an occasional Oort cloud comet into a highly eccentric orbit that carries it toward the Sun. However, only a tiny portion of the Oort cloud comets have orbits that bring them into the inner solar system.

7 The most famous short-period comet is Halley's Comet, named after English astronomer Edmond Halley. ■ Its orbital period averages 76 years, and every one of its 30 appearances since 240 B.C. has been recorded by Chinese astronomers. ■ When seen in 1910, Halley's Comet had developed a tail nearly 1.6 million kilometers (1 million miles) long and was visible during daylight hours. ■ Its most recent approach occurred in 1986. ■

1. All of the following questions can be answered based on the facts presented in paragraph 1 EXCEPT:
A. Do any comets travel to regions of space beyond our solar system?
B. Do most short-period comets enter the inner solar system?
C. What are comets composed of?
D. Why are comets regarded as among the most unpredictable bodies in the solar system?

2. The word "exceed" in the passage is closet in meaning to
A. become
B. grow to
C. approach
D. go beyond

3. The word "detected" in the passage is closet in meaning to
A. noticed
B. created
C. expanded
D. displayed

4. Paragraph 2 supports the idea that comets appear very small when they first become visible from Earth because
A. the glow from the nucleus hides the rest of the comet from view
B. they are still too far away from the Sun to have developed a coma or a tail
C. their various gases have mostly become vaporized
D. they are relatively small when compared to the visible planets

5. Paragraph 2 supports which of the following statements about comet size?
A. The size of a comet is affected by the addition of gases absorbed as the comet passes the Sun.
B. The size of a comet's tail is less variable than the size of its coma.
C. The coma of most comets is smaller than the Sun.

D. The size of a comet cannot be accurately determined until it nears Earth.

6. The word “propose” in the passage is closet in meaning to
A. offer the theory
B. prove
C. agree
D. discover

7. According to paragraph 3, what is true about comets’ tails?
A. Their shape led early astronomers to draw false conclusions about the Sun.
B. They consist mostly of ionized gases that had been blown out of the Sun.
C. Radiation pressure and solar wind both play a role in their formation.
D. Their dust content decreases as a comet nears the Sun.

8. Select TWO answer choices that according to paragraph 4 describe how a comet changes as it travels away from the Sun. To receive credit, you must select TWO answers.
A. It loses its metallic and stony particles.
B. It loses all the material that was in its tail.
C. Its orbital period becomes shorter.
D. The gases that were in its coma recondense.

9. The word “roughly” in the passage is closet in meaning to
A. frequently
B. approximately
C. typically
D. clearly

10. According to paragraphs 5 and 6, compared to the orbits of short-period comets, the orbits of long-period comets are
A. more circular
B. more likely to result in a comet’s entering the inner solar system
C. more likely to be affected by a passing star
D. more likely to lie in the same plane as the planets

11. According to paragraph 6, which of the following is true about the Oort cloud?
A. It is almost 10,000 times the size of the Sun.
B. It is formed by the orbits of long-period comets orbiting far from the Sun.
C. It is produced by the gravitational effects of distant stars.
D. It can disrupt the orbit of a comet enough to send it on a path toward the Sun.

12. According to paragraph 7, all of the following are true of Halley’s Comet EXCEPT:
A. On at least one appearance, it had a tail of well over a million kilometers in length.

B. Each of its last 30 appearances has been recorded by astronomers in China.
C. It is the only comet that can be observed during daylight hours.
D. It averages 76 years between appearances in the inner solar system.

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

It was not until 1705, however, that Halley determined that each of these appearances was actually a reappearance of the same object.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.

Answer Choices

A. The size of a comet's nucleus is determined by two solar forces, radiation pressure and solar wind.
B. Comets accelerate as they move away from the Sun in part because they lose material from the coma each time they pass near the Sun.
C. Comets are at times sent into the inner solar system as a result of a collision or a gravitational disturbance.
D. Although a comet's coma and tail may be quite large, these features do not develop until a comet is close enough to the Sun for solar energy to vaporize its frozen gases.
E. While short-period comets have circular orbits that lie close to the plane of the planets, long-period comets have more elliptical orbits that form a spherical shell around the solar system.
F. Although studies of Halley's Comet and other short-period comets provide some clues, astronomers do not yet fully understand how and when comets formed.

Passage 39

Origin of the Solar System

1 The orderly nature of our solar system leads most astronomers to conclude that the planets formed at essentially the same time and from the same primordial (original) material as the Sun. This material formed a vast cloud of dust and gases called a nebula. The nebular hypothesis suggests that all bodes of the solar system formed from an enormous nebular cloud consisting mostly of hydrogen and helium as well as a small percent of all the other heavier elements known to exist. The heavier substances in this frigid cloud of dust and gases consisted mostly of such elements as silicon, aluminum, iron, and calcium—the substances of today's common rocky materials. Also prevalent were other familiar elements, including oxygen, carbon, and nitrogen.

2 Nearly five billion years ago, some external influence, such as a shock wave traveling from a catastrophic explosion (supernova), may have triggered the collapse of this huge cloud of gases and minute grains of heavier elements, causing the cloud to begin to slowly contract due to the gravitational interactions among its particles. ■ As this slowly spiraling nebula contracted, it rotated faster and faster for the same reason ice-skaters do when they draw their arms toward their bodies. ■ Eventually, the inward pull of gravity came into balance with the outward force caused by the rotational motion of the nebula. ■ By this time the once vast cloud had assumed a flat disk shape with a large concentration of material at its center, called the protosun (pre-Sun). ■ Astronomers are fairly confident that the nebular cloud formed a disk because similar structures have been detected around other stars.

3 During the collapse, gravitational energy was converted to thermal energy (heat), causing the temperature of the inner portion of the nebula to dramatically rise. At such high temperatures, the dust grains broke up into molecules and energized atomic particles. However, at distances beyond the orbit of Mars, the temperatures probably remained quite low. At -200℃, the tiny particles in the outer portion of the nebula were likely covered with a thick layer of ices made of frozen water, carbon dioxide, ammonia, and methane. Some of this material still resides in the outermost reaches of the solar system in a region called the Oort cloud.

4 The formation of the Sun marked the end of the period of contraction and thus the end of gravitational heating. Temperatures in the region where the inner planets now reside began to decline. The decrease in temperature caused those substances with high melting points to condense into tiny particles that began to coalesce (join together). Such materials as iron and nickel and the elements of which the rock-forming minerals are composed—silicon, calcium, sodium, and so forth—formed metallic and rocky clumps that orbited the Sun. Repeated collisions caused these masses to coalesce into larger asteroid-size bodies, called protoplanets, which in a few tens of millions of years accumulated into the four inner planets we call Mercury, Venus, Earth, and Mars. Not all of these clumps of matter were incorporated into the protoplanets. Rocky and metallic pieces that still remain in orbit are called meteoroids.

5 As more and more material was swept up by the inner planets, the high-velocity impact of nebular debris

caused the temperatures of these bodies to rise. Because of their relatively high temperatures and weak gravitational fields, the inner planets were unable to accumulate much of the lighter components of the nebular cloud. The lightest of these, hydrogen and helium, were eventually whisked from the inner solar system by the solar winds.

6 At the same time that the inner planets were forming, the larger, outer planets (Jupiter, Saturn, Uranus, and Neptune), along with their extensive satellite systems, were also developing. Because of low temperatures far from the Sun, the material from which these planets formed contained a high percentage of ices—water, carbon dioxide, ammonia, and methane—as well as rocky and metallic debris. The accumulation of ices partly accounts for the large sizes and low densities of the outer planets. The two most massive planets, Jupiter and Saturn, had surface gravities sufficient to attract and hold large quantities of even the lightest elements—hydrogen and helium.

1. According to paragraph 1, which of the following best describes the "nebular hypothesis"?

A. Our solar system formed from a large cloud consisting mostly of hydrogen and helium and of small amounts of other elements.
B. Our solar system formed from gases and heavier elements thrown off by the Sun as it rotated in the center of the nebular cloud.
C. The primordial matter that evolved into our solar system consisted mostly of familiar elements such as oxygen, carbon, and nitrogen.
D. A cloud of dust and gases gathered into a rotating nebula composed mostly of the rocky materials seen on Earth today.

2. The word "frigid" in the passage is closet in meaning to

A. moving
B. giant
C. original
D. cold

3. 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. Possibly due to some explosion about five billion years ago, this nebular cloud began to collapse, causing gravitational contractions as its particles interacted.
B. About five billion years ago, a supernova may have exploded, causing a huge cloud of gases and heavier elements to form
C. Gravitational attraction among particles of gases and heavier elements caused some explosive event nearly five billion years ago.
D. About five billion years ago, a shock wave from an external event caused this huge cloud of gases to collapse into small grains of heavier elements.

4. In paragraph 2, why does the author describe how ice-skaters use their arms to increase their speed of rotation?

A. To help describe the armlike structures on a spiraling nebula

B. To help explain why a nebula rotates faster when it contracts
C. To show why spinning ice-skaters are not pulled down by gravity
D. To show how the motion of a nebula differs from that of an ice-skater

5. The word "detected" in the passage is closet in meaning to
A. formed
B. predicted
C. discovered
D. recorded

6. According to paragraph 2, why do astronomers believe that the nebular cloud formed a disk around the protosun?
A. They can still see some debris from the disk.
B. They have observed that disks have formed around other stars.
C. They know that any rotating cloud of gas tends to contract into a disk shape.
D. They have conducted experiments with gravity that have confirmed their belief.

7. According to paragraph 3, which of the following best explains why the inner part of the nebula became hotter as the nebula contracted?
A. The nebula rose in temperature as its speed of rotation increased.
B. Atomic particles in the nebula gave off more heat when they became energized.
C. The dust grains broke up into smaller parts, allowing more light from the Sun to reach the inner portion of the nebula.
D. As the nebula collapsed, its gravitational energy was changed into heat energy

8. According to paragraph 4, the protoplanets formed by
A. gravitational interactions among meteoroids
B. increases in the gravitational pull of the Sun
C. the warming of the nebular cloud
D. collisions between materials orbiting the Sun

9. According to paragraph 4, all of the following occurred when the nebula stopped contracting EXCEPT:
A. Gravitational interactions between heavier elements decreased.
B. Temperatures declined in the area of the inner planets.
C. Some elements formed rocky masses that orbited the Sun.
D. Protoplanets were formed.

10. What can be inferred from paragraph 6 about the role that gravity on the outer planets plays in their having low densities?
A. The forces of gravity from the outer planets increase the speed of the solar winds, causing the winds to carry away the heavier, denser elements.
B. The outer planets' strong gravities capture low-density ices from the outer reaches of the solar system.
C. Gravity on the outer planets is strong enough to prevent lighter elements from escaping.

D. The strong gravity on the outer planets results in high-velocity impacts with nebular debris, causing their denser elements to be carried away into space.

11. The word “extensive” in the passage is closet in meaning to
A. developing
B. large
C. complex
D. centralized

12. The phrase “accounts for” in the passage is closet in meaning to
A. explains
B. creates
C. encourages
D. illustrates

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

In other words, as the outer parts of a rotating mass are pulled inward, the speed of rotation increases.

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

14. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some answer choices do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points.
Drag your choices to the spaces where they belong. To review the passage, click on View Text.
Answer Choices

A. The early solar system was made mostly of heavier materials, such as rock-forming minerals, with a small percentage of light elements such as hydrogen, helium, oxygen, carbon, and nitrogen.
B. As the outer parts of the nebular cloud cooled, they became home to a region of rocky and metallic debris known as meteoroids.
C. The inner planets formed when certain minerals collided and coalesced into larger bodies with high temperatures and weak gravitational fields that were not able to retain the lightest elements.
D. Perhaps as the result of an explosive event, the nebular cloud collapsed and began contracting as gravity caused to particles to interact.
E. A supernova sent a shock wave through the nebular cloud, causing it to expand until its heavier elements were forced to the outer solar system.
F. Being farther from the Sun, the outer planets were cooler than the inner plants, giving them a higher percentage of elements in the form of ice and a large quantity of the lightest gases: hydrogen and helium.

Passage 40

Motor Development in Children

1 Control over one's motor behavior ranks among the infant's greatest achievements. Psychologists who study the acquisition of motor skills in children find it useful to distinguish between gross motor development, that is, motor skills which help children to get around in their environment such as crawling and walking, and fine motor development, which refers to smaller movement sequences like reaching and grasping.

2 The development of motor skills has implications beyond simply learning how to perform new actions: motor skills can have profound effects on other areas of development. For example, researchers have shown that infants with locomotor experience (experience moving around their environment) were less likely to make errors while searching for hidden objects. The ability to initiate movement around one's environment stimulates the development of, making hidden object tasks easier to solve. Psychology professor Carolyn Rovee-Collier argues that the onset of independent locomotion at around nine months old marks an important transition in memory development. Children who can move about the environment develop an understanding of locations such as here and there. Because infant memory is initially highly dependent on context that is, the similarity between the situations where information is encoded (stored in memory) and where it is recalled infants who have experience moving about the environment and who learn to spatially encode information become less dependent on context for successful recall. These examples show that gross motor development has implications beyond the immediately apparent benefits of crawling and walking.

3 Renowned psychologist Jean Piaget argued that the development of reaching and grasping was a key aspect of development because it formed an important link between biological adaptation and intellectual adaptation. Reaching and grasping are voluntary actions under the infant's control, and as such, they open up exciting new possibilities in their ability to explore the environment. An infant who reaches for and grasps an object so as to explore it pushes his development forward as he engages in processes such as adapting his grip to the size and shape of the object. Piaget argued that these early processes drive cognitive development in the first two years of an infant's life.

4 The development of reaching begins early on in life. Newborn infants seated in an upright position will swipe and reach towards an object placed in front of them, a behavior labeled "prereaching." These poorly coordinated behaviors start to decline around two months of age and are replaced by "directed reaching" which begins at about three months of age. At this time reaching becomes more coordinated and efficient, and improves in accuracy. According to research conducted by Clifton et al., the infant's reaching does not depend simply on the guidance of the hand and arm by the visual system but is controlled by proprioception, the sensation of movement and location based on the stimulation arising from bodily sources such as muscle contractions. By about nine months old, infants can adjust their reaching to take into account a moving object. However, nine month olds are far from expert reachers. A good deal of skill must still develop.

5 Once infants begin reaching they also begin to grasp the objects that are the target of their reaches. The ulnar grasp is seen when infants first engage in directed reaching. The ulnar grasp is a primitive form of grasping in which the infant's fingers close against its palm. ■ The fingers seem to act as a whole, requiring the use of the palm in order to hold an object. ■ Shortly after this accomplishment, when infants can sit upright on their own, they can acquire the ability to transfer objects from hand to hand. ■ Around the end of the first year, infants will have graduated to using the pincer grasp where they use their index finger and thumb in an opposable manner (placing them opposite each other), resulting in a more coordinated and finely tuned grip which allows for the exploration of very small objects or those objects which demand specific actions for their operation, such as the knobs on a stereo system which require turning to the left or right to adjust volume. ■

1. According to paragraph 1, the distinction between gross motor development and fine motor development is based primarily on
A. how much control the infant has over the motor skills
B. when the motor skills are developed
C. the size of the movement sequences involved
D. the usefulness of the movement sequences involved

2. The word “onset” in the passage is closest in meaning to
A. achievement
B. beginning
C. improvement
D. practice

3. The phrase “immediately” apparent in the passage is closest in meaning to
A. available
B. obvious
C. desirable
D. useful

4. According to paragraph 2, why do infants with locomotor experience have less trouble locating hidden objects
A. Moving around their environment helps infants to develop a better memory for spatial locations.
B. Moving around their environment increases infants' ability to make use of context to identify objects.
C. Moving around their environment gives infants more opportunity to correct their errors when searching for objects.
D. Moving around their environment reduces the time infants have to spend spatially encoding information.

5. According to paragraph 2, as a result of developing an understanding of here and there, infants are better able to
A. describe the locations of objects in space
B. feel comfortable in new and unfamiliar situations

C. use context as an aid to recalling previously encoded information
D. recall information in situations unlike the one in which it was originally encoded

6. The word “Renowned” in the passage is closest in meaning to
A. Educational
B. Controversial
C. Famous
D. Theoretical

7. The phrase “engages in” in the passage is closest in meaning to
A. repeats
B. learns about
C. performs
D. imitates

8. What can be inferred from paragraph 3 about the cognitive development of an infant in its first two years of life as described by Piaget
A. It is a sign of advanced development when an infant is able to control its urges to reach and grasp.
B. Repeated practice reaching for and grasping objects results in important biological adaptations.
C. Infants who spend large amounts of time in exciting environments have more difficulty in their intellectual development.
D. An infant's development will be slower if it is not given the opportunity to reach for and hold objects.

9. In paragraph 4, why does the author emphasize the point that nine month olds are far from expert reachers
A. To support the idea that nine-month-olds vary a great deal in their reaching abilities
B. To distinguish between the directed reaching and the non-directed reaching of infants
C. To stress that an infant's reaching skills continue to improve even after the first nine months
D. To call into question the accuracy of the results presented by Clifton et al

10. According to paragraph 4, which of the following statements about directed reaching is true
A. Directed reaching behaviors have typically developed by the time an infant is about two months old.
B. Directed reaching behaviors do not appear until an infant is able to account for the movement of an object.
C. Directed reaching is the earliest form of reaching behavior that infants develop.
D. Directed reaching is controlled both by the visual system and by proprioception.

11. All of the following statements about the ulnar grasp are true EXCEPT:
A. It is a relatively uncoordinated form of grasping.
B. It is used by infants when they first engage in directed reaching.
C. It develops only after infants become able to sit upright on their own.
D. It makes use of the palm as well as the fingers to hold an object.

12. 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. Infants of about a year old begin using their index finger and thumb to make more coordinated and finely tuned movements, allowing them to explore and manipulate small objects.
B. Around the end of the first year, infants begin to use a type of grip on small objects that is more coordinated and finely tuned than was the pincer grasp.
C. Infants begin handling very small or difficult-to-operate objects at about one year of age, resulting in improvements in their ability to grip objects with their thumb and fingers.
D. When one-year-old infants begin using the pincer grasp, they become much more interested in very small objects (such as knobs on a stereo system).

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

What accounts for this greater accuracy?

Where would the sentence best fit? Click on a square to add the sentence to the passage.

14. Drag your choices to the spaces where they belong. To review the passage, click on View Text. Answer Choices
A. The ability to move around in an environment gives infants an understanding of location and thus reduces the extent to which their memory is dependent on context.
B. Infants become better at finding hidden objects once they have developed the type of grasp that allows them to handle and explore very small objects in their environment.
C. Piaget argues that an infant's cognitive development is related to the development of fine motor skills that make it possible for infants to interact with and adapt their actions to their environment.
D. Fine motor skills tend to develop later than do gross motor skills because fine motor skills require smaller, more finely tuned movements and a great deal of coordination.
E. When infants first begin to grasp objects, they transfer the objects from hand to hand and firmly close their fingers against their palms.
F. Reaching and grasping begin early; by about three months, reaching is more coordinated and efficient, and by one year, infants begin to develop a coordinated and finely tuned grip.

答案

Passage 1

序号	1	题目	Animal Behavior						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
D	A	A	B	C	B	D	B	B	C
Q11	**Q12**	**Q13**							
D	A	BD;ACE							
文章概要									
本文主要讲了科学家对动物行为的研究。 第一段：研究动物行为分为两派，一派是动物行为学； 第二段：还有一派是研究动物行为背后的进化史、神经活动的； 第三段：研究动物行为应该只研究可见的外在行为； 第四段：前者认为动物行为来自于本能，后者认为来自于后天的学习和强化； 第五段：两个学派争论幼鸟乞食是来自本能还是学习； 第六段：现在的说法是两个学派都有道理，先天后天共同影响动物行为。									

Passage 2

序号	2	题目	Wind pollination						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
D	A	A	C	C	AC	B	B	B	B
Q11	**Q12**	**Q13**	**Q14**						
A	D	B	BCE						
文章概要									
本文主要介绍了植物的风力传粉。 第一段：相隔较近、数量较多的温带植物适用于风力传粉，相隔较远、单株单株分布的植物不适用于风力传粉； 第二段：风力传粉的植物不需要鲜艳的花朵和香气； 第三段：落叶植物一般选择春天传粉，以避免叶子影响传粉； 第四段：植物会通过控制花粉离开植物的时机来提高传粉效率； 第五段：小颗粒的花粉飞得远，但不容易黏到柱头上。									

Passage 3

序号	3	题目	Cereals and Legumes: A Partnership						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	D	B	A	A	C	BC	A	D	D
Q11	Q12	Q13	Q14						
B	A	A	BCE						
文章概要									
本文主要讲了谷物和豆类共生的关系。 第一段：谷类植物营养丰富，易于储藏，但容易耗尽土壤营养； 第二段：豆类植物具有和谷类相似的优点，而且可以补充被谷类植物耗尽的氮元素； 第三段：谷类和豆类一起食用对人体有好处； 第四段：其他植物也被人们尝试种植，但并比不上谷类和豆类。									

Passage 4

序号	4	题目	Models of Egg Development						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	A	D	B	C	A	D	C	A	C
Q11	Q12	Q13	Q14						
B	D	A	BCD						
文章概要									
本文主要讲了卵的四种进化模型。 第一段：软壳的卵是如何进化成硬壳的卵的，Romer 给出的进化模型； 第二段：Kohring 给出的进化模型； 第三段：Packard 二人给出的反天敌假说； 第四段：Mary Packard 和 Roger Seymour 给出的另一种假说。									

Passage 5

序号	5	题目	Honeybee Society						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	B	C	A	D	D	B	A	B	C
Q11	Q12	Q13	Q14						
D	B	D	BCE						
文章概要									
本文主要讲了蜜蜂群体的运转。 第一段：一个蜂巢里面雌蜂居多，雄峰很少，不管交配成功与否，都会很快死去； 第二段：工蜂承担了蜂巢里的绝大部分工作； 第三段：工蜂的具体工作是什么； 第四段：蜜蜂之间的信息传递方式； 第五段：不同蜜蜂间彼此的行为互相影响；									

Passage 6

序号	6	题目	Birdsong						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	C	D	C	C	A	C	B	A	D
Q11	Q12	Q13							
C	C	B							
文章概要									
本文主要讲了鸟儿是如何学习唱歌的。 第一段：鸟儿学唱歌同时受到基因和环境的影响； 第二段：环境影响鸟儿学习歌唱； 第三段：基因影响鸟儿学习歌唱； 第四段：鸟儿的其他几种学习歌唱的方式。									

Passage 7

序号	7	题目	How Birds Acquire Their Songs						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	C	B	D	D	B	A	B	D	A
Q11	Q12	Q13	Q14						
B	B	C	ABE						
文章概要									
本文主要讲了鸟儿是如何学习歌唱的。 第一段：鸟儿学习歌唱的过程； 第二段：某种麻雀，家养的比野生的学会唱歌晚； 第三段：野生鸟儿为了鸣叫以表示占有土地，会比实验室里养的鸟儿更早学会歌唱； 第四段：鸟儿学习歌唱也会受到关键期的影响； 第五段：鸟儿学习歌唱也会受到基因的影响。									

Passage 8

序号	8	题目	Bird Colonies						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	B	A	D	D	C	D	B	A	B
Q11	Q12	Q13	Q14						
A	D	B	DEF						
文章概要									
本文主要讲了鸟类栖息地的选择。 第一段：影响鸟儿选择栖息地的两大因素； 第二段：鸟儿防止被捕食者捕食的三大方法； 第三段：鸟儿群居的益处； 第四段：鸟类群居的地方必须靠近物产丰富的地区； 第五段：鸟儿群居的坏处及其解决方法；									

Passage 9

序号	9	题目	Vocalization in Frogs						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	C	B	D	C	B	D	C	A
Q11	Q12	Q13	Q14						
B	A	B	CDF						
文章概要									
本文主要讲了。 第一段：Túngara 青蛙鸣叫的特征； 第二段：Túngara 青蛙发出复杂鸣叫的原因应该是为了利于择偶； 第三段：为什么 Túngara 青蛙只在其他雄性在场的时候才发出复杂叫声； 第四段：实验证明发出复杂叫声的 Túngara 青蛙确实更容易被蝙蝠定位；									

Passage 10

序号	10	题目	Crown of Thorns Starfish and Coral Reefs						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	B	B	A	C	B	D	A	B	B
Q11	Q12	Q13	Q14						
A	C	A	ACD						
文章概要									
本文主要讲了海星大爆发的原因 第一段：介绍了荆棘王冠海星的样子，以及说明某些原因导致海星数量大爆发+珊瑚数量骤减； 第二段：Acanthaster 非常能吃珊瑚礁，尤其是 Acroporids，有时候会吃光一片地区的所有的 Acroporids； 第三段：珊瑚礁死掉之后，海藻及其他物种会在其位置上生长，十到十五年后，珊瑚礁会再长成以前的样子； 第四段：两组人对这个现象提出了自己的解释； 第五段：假设 1 是成年 Acanthasters 聚集效应导致其数量增长； 第六段：假设 2 是盐度和温度导致了这些地区海星的泛滥，假设 3 是食物网导致的； 第七段：还有一种假说是珊瑚幼虫的数量减少导致了海星的增加； 第八段：还有一种假说是海星捕食者数量的减少导致了其数量的大爆发。									

Passage 11

序号	11	题目	The Origin of Coral Reefs						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	C	D	A	C	B	A	B	C	D
Q11	Q12	Q13	Q14						
A	B	D	BDE						
文章概要									
本文主要讲了珊瑚礁的起源。 第一段：珊瑚礁来自珊瑚虫的分泌物，珊瑚礁的分类； 第二段：环礁形成的火山岛下沉理论； 第三段：珊瑚礁形成的达尔文理论； 第四段：珊瑚礁形成的环境适宜理论。									

Passage 12

序号	12	题目	The Role of Diapause						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	D	B	B	A	C	D	A	B	A
Q11	Q12	Q13	Q14						
A	C	B	BEF						
文章概要									
本文主要讲了生物滞育。 第一段：生物在外界环境不适宜生长的时候可以进入滞育期； 第二段：外界环境变差可能是可预测的，也可能是不可预测的； 第三段：袋鼠的滞育行为； 第四段：还是袋鼠的滞育行为，母袋鼠会同时养育三只处于不同发育阶段的小袋鼠； 第五段：蟾蜍的滞育行为，下雨的时候出来快速繁殖，干旱的时候蛰伏起来。									

Passage 13

序号	13	题目	What Controls Flowering						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
A	C	A	B	D	A	A	C	C	B
Q11	**Q12**	**Q13**	**Q14**						
B	D	C	ABC						
文章概要									
本文主要讲了植物开花的影响因素。 第一段：植物开花和其环境因素息息相关； 第二段：植物是如何识别季节的； 第三段：植物按照开花时间方式的不同分为了三种； 第四段：植物学家可以让植物提前开花； 第五段：植物如何测量黑暗的时间长短； 第六段：如何阻止植物开花。									

Passage 14

序号	14	题目	Removing Dams						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
D	C	C	B	B	A	D	C	A	D
Q11	**Q12**	**Q13**	**Q14**						
B	B	C	ACD						
文章概要									
本文主要讲了移除大坝的原因和案例。 第一段：建造大坝的益处和害处； 第二段：公众舆论开始倾向于移除现有大坝； 第三段：美国第一个移除的大坝 Edwards Dam 大坝； 第四段：接下来要被移除的两个大坝 Elwha 和 Glines 大坝； 第五段：另外一些移除大坝的提议； 第六段：关于大坝移除的几点疑问。									

Passage 15

序号	15	题目	Early Modern Industrialization						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	B	A	C	B	B	C	D	C	C
Q11	Q12	Q13							
C	B	ADF							
文章概要									
本文主要讲了现代早期工业腾飞的原因。 第一段：欧洲工业腾飞的决定性原因在其内部； 第二段：欧洲人口增长，收入升高导致了工业的发展； 第三段：人口大量流入和大量商品流入市场也促进了工业的发展； 第四段：科技的发展降低了工业生产的成本； 第五段：运输成本降低也助力了工业的发展。									

Passage 16

序号	16	题目	The Collapse of the Mayans						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	C	A	D	B	B	D	D	C	B
Q11	Q12	Q13	Q14						
C	A	A	CDF						
文章概要									
本文主要讲了玛雅文明的陷落。 第一段：玛雅社会因为人口过多，导致农耕压力变大； 第二段：环境气候可能是玛雅文明消失的原因之一； 第三段：战争和社会动荡也可能是玛雅文明消失的原因之一； 第四段：食物短缺对于玛雅文明陷落的影响； 第五段：非人为因素对于玛雅文明陷落的影响。									

Passage 17

序号	17	题目	The Rise of Moscow						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
D	A	C	B	D	D	B	C	A	C
Q11	**Q12**	**Q13**	**Q14**						
A	B	B	ACD						
文章概要									
本文主要讲了墨西哥崛起的原因 第一段：墨西哥崛起之前其实是一个很小很弱的地区； 第二段：墨西哥地理位置好，方便移民，靠近重要水源； 第三段：还是墨西哥的地理位置，帮助它缓冲了外来入侵； 第四段：墨西哥得益于水流而发展贸易，又得益于农业而使人口居住于此； 第五段：墨西哥王位传承很顺利，统治者内部没有过多的争斗。									

Passage 18

序号	18	题目	Population Revolution in Eighteenth-Century Europe						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	B	B	C	B	C	B	D	D	A
Q11	Q12	Q13	Q14						
D	C	A	BCE						
文章概要									
本文主要讲了十八世纪欧洲人口革命。 第一段：土豆被引入欧洲； 第二段：农业上开始了各种革新； 第三段：欧洲人口数量增长； 第四段：人口增长的原因是出生率高于了死亡率； 第五段：总结了人口增长的原因和影响。									

Passage 19

序号	19	题目	Europe in the High Middle Ages						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	C	D	D	C	B	C	A	B	D
Q11	Q12	Q13	Q14						
C	A	A	BCF						
文章概要									
本文主要讲了中世纪欧洲农业和商业的发展。 第一段：随着农业的科技和管理水平的进步，农业产量上升； 第二段：农民发明了三块土地的轮作方法； 第三段：农民改进了犁； 第四段：农民开始使用马代替牛犁地 第五段：商业得到发展，很多城镇逐渐兴起； 第六段：城镇兴起，随着贸易，多种币种产生了联系，导致银行兴起。									

Passage 20

序号	20	题目	Agriculture in the Late Ottoman Empire						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
D	B	D	A	D	B	A	B	D	B
Q11	Q12	Q13	Q14						
D	A	B	BCE						
文章概要									
本文主要讲了土耳其的农业又自给自足逐渐变得商业化。 第一段：土耳其农业由自给自足的模式逐渐商业化； 第二段：农业增产的原因之一：需求增多； 第三段：农业增产的原因之二：税收增多； 第四段：农业增产的原因之三：农民自身的需求增多； 第五段：农耕土地面积变多； 第六段：生产力同样增长了。									

Passage 21

序号	21	题目	Water Management in Early Agriculture						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	A	A	D	C	A	B	C	C	B
Q11	Q12	Q13	Q14						
C	D	D	ABF						
文章概要									
本文主要讲了早期农业中的用水管理。 第一段：人口增长导致对农业生产的高要求，再导致对充足水资源的需求； 第二段：灌溉面临的问题及人们做出的努力； 第三段：土壤盐碱化的成因； 第四段：土壤盐碱化的解决办法； 第五段：农民开始在斜坡上耕作； 第六段：斜坡农田用水的解决办法。									

Passage 22

序号	22	题目	Extinctions at the End of the Cretaceous						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	C	D	A	A	C	B	C	B	A
Q11	Q12	Q13	Q14						
B	B	B	CEF						
文章概要									
本文主要讲了白垩纪末期的物种大灭绝。 第一段：白垩纪末期，大批物种灭绝； 第二段：海洋里和陆地上一些动物灭绝了，另一些并没有受到很大的影响； 第三段：K/T 边界里的考古学证据； 第四段：对于白垩纪大灭绝的解释；									

Passage 23

序号	23	题目	Pleistocene Extinctions						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	B	B	A	D	C	D	D	B	C
Q11	Q12	Q13	Q14						
A	D	A	AEF						
文章概要									
本文主要讲了更新世大灭绝的两个原因及其所存在的问题。 第一段：更新世大灭绝可能是因为两个原因，一个是气候变化，另一个是人类捕猎； 第二段：气候变化导致更新世大灭绝； 第三段：气候变化这个原因存在的第一个问题，生物为什么不迁徙； 第四段：气候变化这个原因存在的第二个问题，气候变化并不一定会导致物种大灭绝； 第五段：人类捕猎导致更新世大灭绝； 第六段：人类捕猎这个原因存在三个问题； 第七段：更新世大灭绝可能是各种因素共同导致的。									

Passage 24

序号	24	题目	The Cambrian Explosion						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	D	B	D	A	D	D	A	B	B
Q11	Q12	Q13	Q14						
B	C	C	CDF						
文章概要									
本文主要讲了寒武纪物种大爆发。 第一段：寒武纪物种出现了一次大爆发； 第二段：生物是如何分类成类群（门）的； 第三段：几乎所有门生物都出现于寒武纪的一个短时期内； 第四段：关于寒武纪物种大爆发的两个问题； 第五段：回答第一个问题的第一种解释，氧气变多； 第六段：回答第一个问题的第二种解释，基因复杂性上升； 第七段：回答第一个问题的第三种解释，气候变化； 第八段：回答第一个问题的第四种解释，缺少高效率的捕食者； 第九段：回答第二个问题。									

Passage 25

序号	25	题目	Origins of the Megaliths						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
D	B	C	B	D	A	C	A	C	A
Q11	**Q12**	**Q13**	**Q14**						
D	B	B	BEF						

文章概要

本文主要讲了巨石阵的起源。
第一段：巨石阵被发现在大西洋沿海；
第二段：巨石阵可能是来自于爱琴文明；
第三段：巨石阵并不是来自于爱琴文明，而是欧洲本土的发明；
第四段：巨石阵的相似之处来自于建造者的渔猎活动；
第五段：巨石阵的相似之处来自其用途、材料和背景；
第六段：巨石阵的分布和农耕群落的分布一致；
第七段：巨石阵应该是一个地区的标志物。

Passage 26

序号	26	题目	The Extinction of the Dinosaurs						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	B	A	B	B	C	B	B	C	C
Q11	Q12	Q13	Q14						
D	B	D	ABE						

文章概要

本文主要讲了恐龙灭绝的原因。
第一段：地理学家定义白垩纪和古新世之间的沉积层，恐龙化石消失于 6500 万年后的地层；
第二段：超新星爆炸理论；
第三段：其他几种理论：气候、食物、海水理论；
第四段：火山活动理论；
第五段：火山爆发后导致长时间的严寒；
第六段：火山爆发产生二氧化碳导致温室效应，会减缓温度下降。

Passage 27

序号	27	题目	Dinosaurs and Parental Care						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	A	C	D	A	A	C	B	C
Q11	Q12	Q13	Q14						
B	D	C	BCF						
文章概要									
本文主要讲了恐龙的亲代养育。 第一段：亲代养育分两种，一种是子代出生之前的，一种是出生之后的； 第二段：恐龙可能会孵卵； 第三段：小恐龙的牙齿在出生前就出现了磨损； 第四段：恐龙的近亲也会进行亲代养育。									

Passage 28

序号	28	题目	Sumerian Contributions						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	D	C	B	C	C	B	A	C	A
Q11	Q12								
D	B								
文章概要									
本文主要讲了苏美尔人的贡献。 第一段：苏美尔人生存的环境并不富饶，但他们的文明确实兴盛了起来； 第二段：苏美尔人如何耕作土地； 第三段：苏美尔人是发展制造业、商业和矿业； 第四段：苏美尔人发明文字； 第五段：苏美尔人的文字的用途。									

Passage 29

序号	29	题目	England's Economy in sixteenth century						
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
A	B	D	A	B	C	B	C	D	C
Q11	**Q12**	**Q13**	**Q14**						
CD	D	C	BCD						
文章概要									
本文主要讲了十六世纪英格兰经济的发展状况。 第一段：概述了英格兰经济繁荣的原因，如人口死亡率下降、就业机会增多和没有战争等； 第二段：英格兰农业繁荣发展； 第三段：英格兰大片土地连在一起也促进了商业化农业的繁荣； 第四段：地主压榨佃农以获取更多利润； 第五段：经济发展带动了工业的发展； 第六段：纺织业使英格兰经济转型； 第七段：Gresham 这个人对于因果经济的贡献。									

Passage 30

序号	30	题目	Economic Decline in Europe during the Fourteenth Century						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	C	A	B	A	B	A	C	D
Q11	Q12	Q13	Q14						
B	D	B	ABE						
文章概要									
本文主要讲了十四世纪欧洲经济衰退的原因。 第一段：气候变冷导致欧洲人口减少； 第二段：东西方贸易通路断掉； 第三段：农业科技没有继续进步，佃农无法偿还负债； 第四段：信贷危机； 第五段：农村人口大量流入城市。									

Passage 31

序号	31	题目	Mesopotamian and Egyptian Settlement Patterns						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
D	A	C	C	A		D	B	B	D
Q11	Q12	Q13	Q14						
B	A	B	ACF						
文章概要									
本文主要讲了美索不达米亚和埃及人类居住地分布模式。 第一段：美索不达米亚和埃及人的居住地分布呈现出两种极端的情况； 第二段：美索不达米亚城市的分布模式； 第三段：美索不达米亚城市的人口情况； 第四段：美索不达米亚城市的商业发展； 第五段：古埃及分散式的居住地分布； 第六段：古埃及也有大城市，其城市分布融合了时代特征和自己的地域影响结果。									

Passage 32

序号	32	题目	The origins of Writing						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	C	A	D	C	C	D	C	D	A
Q11	Q12	Q13	Q14						
B	C	B	BCD						
文章概要									
本文主要讲了文字的起源。 第一段：最早的文字起源于埃及和美索不达米亚平原； 第二段：埃及人在纸莎草上书写文字，苏美尔人在黏土板上书写文字； 第三段：苏美尔人发明了一种适合在黏土上书写的文字，楔形文字； 第四段：苏美尔人被征服之后，他们的文字却还是被以书面文字的形式保存了下来； 第五段：早期黏土板上的内容； 第六段：黏土板经常一批一批地出现，以及成批的黏土板的内容。									

Passage 33

序号	33	题目	Early Theories of Continental Drift						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	B	D	C	D	C	A	B	A	C
Q11	Q12	Q13	Q14						
C	B	A	BCE						
文章概要									
本文主要讲了大陆漂移的早期假说。 第一段：早期的大陆可能是连在一起，以后才分开的； 第二段：Suess发现的大陆漂移的化石证据； 第三段：Taylor通过山脉和潮汐来解释大陆漂移； 第四段：Wegener解释大陆漂移； 第五段：Toit关于大陆漂移的解释； 第六段：大多数科学家不怎么相信大陆会漂移。									

Passage 34

序号	34	题目	The Origin of Earth's Atmosphere						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	D	C	C	D	A	AD	C	B
Q11	Q12	Q13	Q14						
A	A		BDE						
文章概要									
本文主要讲了地球大气的形成。 第一段：地球是如何形成的； 第二段：地球形成后温度上升，地心处由铁组成，地球开始具有磁场； 第三段：地幔形成； 第四段：大陆地壳形成； 第五段：地球的磁场留住了一小部分来自地下和来自彗星撞击的气体，形成了大气。									

Passage 35

序号	35	题目	Attempts at Determining Earth’s Age						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	C	C	B	D	B	C	C	A	C
Q11	Q12	Q13	Q14						
B	D	D	BCD						
文章概要									
本文主要讲了人们测定地球年龄的尝试。 第一段：人类非常想知道地球的确切年龄； 第二段：有的科学家试图通过生物进化速率来测定地球年龄； 第三段：有的科学家试图通过沉积物来测定地球年龄； 第四段：还有两个科学家试图通过测海洋的年龄来估算地球的年龄。									

Passage 36

序号	36	题目	Earthquake Prediction						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	C	C	C	B	A	B	B	D
Q11	Q12	Q13	Q14						
A	C	A	BCE						
文章概要									
本文主要讲了我们是如何预测地震的。 第一段：目前无法精确预测地震； 第二段：理论上的一种长周期的预测地震的理论； 第三段：一种短周期的预测地震的理论； 第四段：地下裂缝和地下水是如何被用来预测地震的； 第五段：地下水中氡气含量上升以及其他的现象也可以用来预测地震； 第六段：阶段性的先导现象分别是什么，以及其不准确性。									

Passage 37

序号	37	题目	Architectural Change in Eighth-Century Japan						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	D	A	B	C	D	B	C	C	A
Q11	Q12	Q13	Q14						
D	B	D	ACE						
文章概要									
本文主要讲了八世纪时，传统日本建筑发生的转变。 第一段：八世纪时，传统日本建筑受到了亚洲建筑的影响； 第二段：八世纪前，精英婚姻导致传统建筑拥有了小、简单、易迁移的特点； 第三段：日本建筑需要常翻新，其构造特征也可以让它们常翻新； 第四段：随着领土变大，建筑规模也变大了，这就导致了建筑变得不好移动； 第五段：日本建筑逐渐开始采用亚洲其他国家的建筑方法； 第六段：日本建筑不再移动，守卫加强了； 第七段：日本建筑在本土传统建筑风格和大陆其他国家建筑风格之间取了折中的方案。									

Passage 38

序号	38	题目	Comets						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	D	A	B	C	A	C	BD	B	C
Q11	Q12	Q13	Q14						
B	A	B	ADE						
文章概要									
本文主要讲了彗星的形成。 第一段：彗星的构成和运行； 第二段：彗发的形成及其随距太阳的远近的变化而变化； 第三段：两种导致彗发形成的力量； 第四段：彗星远离太阳时彗发的变化，及彗发的消失； 第五段：短周期彗星的特征； 第六段：长周期彗星的特征； 第七段：哈利彗星的运行特征。									

Passage 39

序号	39	题目	Origin of the Solar System						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	D	A	B	C	B	D	D	A	C
Q11	Q12	Q13	Q14						
B	A	B	ACF						
文章概要									
本文主要讲了太阳系的起源。 第一段：太阳系形成的星云假说； 第二段：星云聚合，形成原始太阳； 第三段：星体内部温度高，外部温度低； 第四段：星体形成后温度下降，核心成分凝固成核，经过碰撞和聚合，又形成行星和流星； 第五段：高速运行的内星体失去了质量较轻的成分； 第六段：外行星形成，留住了较轻的组成成分。									

Passage 40

序号	40	题目	Motor Development in Children						
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	B	B	B	C	C	C	D	C	D
Q11	Q12	Q13	Q14						
C	A	C	CDF						
文章概要									
本文主要讲了儿童动作的发展。 第一段：儿童学习的动作分为粗动作和细动作； 第二段：儿童动作的发展会对其其他方面的发展产生积极影响，比如寻找藏起来的物品； 第三段：伸手和抓握这两个动作在儿童动作发展中很关键； 第四段：儿童的前伸手动作和直接伸手动作； 第五段：儿童的手掌抓握和指尖抓握。									