

# 1995-2000 Reading Full Test

## 1995-08

### Questions 1-9

The ocean bottom -----a region nearly 2.5 times greater than the total land area of the Earth ---- is a vast frontier that even today is largely unexplored and uncharted. Until about a century ago, the deep-ocean floor was completely inaccessible, hidden beneath waters averaging over 3,600 meters deep. Totally without light and subjected to intense pressures hundreds of times greater than at the Earth's surface, the deep-ocean bottom is a hostile environment to humans, in some ways as forbidding and remote as the void of outer space.

Although researchers have taken samples of deep-ocean rocks and sediments for over a century, the first detailed global investigation of the ocean bottom did not actually start until 1968, with the beginning of the National Science Foundation's Deep Sea Drilling Project (DSDP). Using techniques first developed for the offshore oil and gas industry, the DSDP's drill ship, the Glomar Challenger, was able to maintain a steady position on the ocean's surface and drill in very deep waters, extracting samples of sediments and rock from the ocean floor.

The Glomar Challenger completed 96 voyages in a 15-year research program that ended in November 1983. During this time, the vessel logged 600,000 kilometers and took almost 20,000 core samples of seabed sediments and rocks at 624 drilling sites around the world. The Glomar Challenger's core samples have allowed geologists to reconstruct what the planet looked like hundred of millions of years ago and to calculate what it will probably look like millions of years in the future. Today, largely on the strength of evidence gathered during the Glomar Challenger's voyages, nearly all earth scientists agree on the theories of plate tectonics and continental drift that explain many of the geological processes that shape the Earth.

The cores of sediment drilled by the Glomar Challenger have also yielded information critical to understanding the world's past climates. Deep-ocean sediments provide a climatic record stretching back hundreds of millions of years, because they are largely isolated from the mechanical erosion and the intense chemical and biological activity that rapidly destroy much land-based evidence of past climates. This record has already provided insights into the patterns and causes of past climatic change --- information that may be used to predict future climates.

1. The author refers to the ocean bottom as a "frontier" in line 2 because it

- (A) is not a popular area for scientific research
- (B) contains a wide variety of life forms
- (C) attracts courageous explorers
- (D) is an unknown territory

2. The word "inaccessible" in line 3 is closest in meaning to

- (A) unrecognizable

(B)unreachable

(C)unusable

(D)unsafe

3.The author mentions outer space in line 7 because

(A)the Earth's climate millions of years ago was similar to conditions in outer space.

(B)it is similar to the ocean floor in being alien to the human environment

(C)rock formations in outer space are similar to those found on the ocean floor

(D)techniques used by scientists to explore outer space were similar to those used in ocean exploration

4. Which of the following is true of the Glomar Challenger?

(A) It is a type of submarine.

(B) It is an ongoing project.

(C) It has gone on over 100 voyages

(D) It made its first DSDP voyage in 1968

5. The word " extracting " in line 13 is closest in meaning to

(A) breaking

(B) locating

(C) removing

(D) analyzing

6. The deep Sea Drilling Project was significant because it was

(A) an attempt to find new sources of oil and gas

(B) the first extensive exploration of the ocean bottom

(C) composed of geologists from all over the world

(D) funded entirely by the gas and oil industry

7. The word " strength " in line21 is closest in meaning to

(A)basis

(B)purpose

(C)discovery

(D)endurance

8.The word " they " in line26 refers to

(A)years

(B)climates

(C)sediments

(D)cores

9.Which of the following is NOT mentioned in the passage as being a result of the Deep Sea Drilling Project?

(A) Geologists were able to determine the Earth's appearance hundreds of millions of years ago.

(B) Two geological theories became more widely accepted

(C) Information was revealed about the Earth's past climatic changes.

(D) Geologists observed forms of marine life never before seen.

**Question 10-21**

Basic to any understanding of Canada in the 20 years after the Second World War is the country's impressive population growth. For every three Canadians in 1945, there

were over five in 1966. In September 1966 Canada's population passed the 20 million mark. Most of this surging growth came from natural increase. The depression of the 1930's and the war had held back marriages, and the catching-up process began after 1945. The baby boom continued through the decade of the 1950's, producing a population increase of nearly fifteen percent in the five years from 1951 to 1956. This rate of increase had been exceeded only once before in Canada's history, in the decade before 1911, when the prairies were being settled. Undoubtedly, the good economic conditions of the 1950's supported a growth in the population, but the expansion also derived from a trend toward earlier marriages and an increase in the average size of families. In 1957 the Canadian birth rate stood at 28 per thousand, one of the highest in the world.

After the peak year of 1957, the birth rate in Canada began to decline. It continued falling until in 1966 it stood at the lowest level in 25 years. Partly this decline reflected the low level of births during the depression and the war, but it was also caused by changes in Canadian society. Young people were staying at school longer; more women were working; young married couples were buying automobiles or houses before starting families; rising living standards were cutting down the size of families. It appeared that Canada was once more falling in step with the trend toward smaller families that had occurred all through the Western world since the time of the Industrial Revolution.

Although the growth in Canada's population had slowed down by 1966 (the increase in the first half of the 1960's was only nine percent), another large population wave was coming over the horizon. It would be composed of the children who were born during the period of the high birth rate prior to 1957.

10. What does the passage mainly discuss?
- (A) Educational changes in Canadian society
  - (B) Canada during the Second World War
  - (C) Population trends in postwar Canada
  - (D) Standards of living in Canada
11. According to the passage, when did Canada's baby boom begin?
- (A) In the decade after 1911
  - (B) After 1945
  - (C) During the depression of the 1930's
  - (D) In 1966
12. The word "five" in line 3 refers to
- (A) Canadians
  - (B) years
  - (C) decades
  - (D) marriages
13. The word "surging" in line 4 is closest in meaning to
- (A) new
  - (B) extra
  - (C) accelerating

- (D) surprising
14. The author suggests that in Canada during the 1950's
- (A) the urban population decreased rapidly
  - (B) fewer people married
  - (C) economic conditions were poor
  - (D) the birth rate was very high
15. The word "trend" in line 11 is closest in meaning to
- (A) tendency
  - (B) aim
  - (C) growth
  - (D) directive
16. The word "peak" in line 14 is closest in meaning to
- (A) pointed
  - (B) dismal
  - (C) mountain
  - (D) maximum
17. When was the birth rate in Canada at its lowest postwar level?
- (A) 1966
  - (B) 1957
  - (C) 1956
  - (D) 1951
18. The author mentions all of the following as causes of declines in population growth after 1957 EXCEPT
- (A) people being better educated
  - (B) people getting married earlier
  - (C) better standards of living
  - (D) couples buying houses
19. It can be inferred from the passage that before the Industrial Revolution
- (A) families were larger
  - (B) population statistics were unreliable
  - (C) the population grew steadily
  - (D) economic conditions were bad
20. The word "It" in line 25 refers to
- (A) horizon
  - (B) population wave
  - (C) nine percent
  - (D) first half
21. The phrase "prior to" in line 26 is closest in meaning to
- (A) behind
  - (B) since
  - (C) during
  - (D) preceding

**Questions 22-30**

Are organically grown foods the best food choices? The advantages claimed for such foods over conventionally grown and marketed food products are now being debated. Advocates of organic foods ----- a term whose meaning varies greatly --- frequently proclaim that such products are safer and more nutritious than others.

The growing interest of consumers in the safety and nutritional quality of the typical North American diet is a welcome development. However, much of this interest has been sparked by sweeping claims that the food supply is unsafe or inadequate in meeting nutritional needs. Although most of these claims are not supported by scientific evidence, the preponderance of written material advancing such claims makes it difficult for the general public to separate fact from fiction. As a result, claims that eating a diet consisting entirely of organically grown foods prevents or cures disease or provides other benefits to health have become widely publicized and form the basis for folklore.

Almost daily the public is besieged by claims for "no-aging" diets, new vitamins, and other wonder foods. There are numerous unsubstantiated reports that natural vitamins are superior to synthetic ones, that fertilized eggs are nutritionally superior to unfertilized eggs, that untreated grains are better than fumigated grains, and the like.

One thing that most organically grown food products seem to have in common is that they cost more than conventionally grown foods. But in many cases consumers are misled if they believe organic foods can maintain health and provide better nutritional quality than conventionally grown foods. So there is real cause for concern if consumers, particularly those with limited incomes, distrust the regular food supply and buy only expensive organic foods instead.

22. The word "Advocates" in line 3 is closest in meaning to which of the following?
- (A) Proponents
  - (B) Merchants
  - (C) Inspectors
  - (D) Consumers
23. In line 4, the word "others" refers to
- (A) advantages
  - (B) advocates
  - (C) organic foods
  - (D) products
24. The "welcome development" mentioned in line 6 is an increase in
- (A) interest in food safety and nutrition among North Americans
  - (B) the nutritional quality of the typical North American diet
  - (C) the amount of healthy food grown in North America
  - (D) the number of consumers in North America
25. According to the first paragraph, which of the following is true about the term "organic foods"?
- (A) It is accepted by most nutritionists.
  - (B) It has been used only in recent years.
  - (C) It has no fixed meaning.
  - (D) It is seldom used by consumers.

26. The word "unsubstantiated" in line 15 is closest in meaning to
- (A) unbelievable
  - (B) uncontested
  - (C) unpopular
  - (D) unverified
27. The word "maintain" in line 20 is closest in meaning to
- (A) improve
  - (B) monitor
  - (C) preserve
  - (D) restore
28. The author implies that there is cause for concern if consumers with limited incomes buy organic foods instead of conventionally grown foods because
- (A) organic foods can be more expensive but are often no better than conventionally grown foods
  - (B) many organic foods are actually less nutritious than similar conventionally grown foods
  - (C) conventionally grown foods are more readily available than organic foods
  - (D) too many farmers will stop using conventional methods to grow food crops
29. According to the last paragraph, consumers who believe that organic foods are better than conventionally grown foods are often
- (A) careless
  - (B) mistaken
  - (C) thrifty
  - (D) wealthy
30. What is the author's attitude toward the claims made by advocates of health foods?
- (A) Very enthusiastic
  - (B) Somewhat favorable
  - (C) Neutral
  - (D) Skeptical

**Questions 31-40**

There are many theories about the beginning of drama in ancient Greece. The one most widely accepted today is based on the assumption that drama evolved from ritual. The argument for this view goes as follows. In the beginning, human beings viewed the natural forces of the world, even the seasonal changes, as unpredictable, and they sought, through various means, to control these unknown and feared powers. Those measures which appeared to bring the desired results were then retained and repeated until they hardened into fixed rituals. Eventually stories arose which explained or veiled the mysteries of the rites. As time passed some rituals were abandoned, but the stories, later called myths, persisted and provided material for art and drama.

Those who believe that drama evolved out of ritual also argue that those rites contained the seed of theater because music, dance, masks, and costumes were almost always used. Furthermore, a suitable site had to be provided for performances, and when the entire community did not participate, a clear division was usually made between the "acting area" and the "auditorium". In addition, there were performers, and, since considerable importance was attached to avoiding mistakes in the enactment

of rites, religious leaders usually assumed that task. Wearing masks and costumes, they often impersonated other people, animals, or supernatural beings, and mimed the desired effect --- success in hunt or battle, the coming rain, the revival of the Sun --- as an actor might. Eventually such dramatic representations were separated from religious activities.

Another theory traces the theater's origin from the human interest in storytelling. According to this view, tales (about the hunt, war, or other feats) are gradually elaborated, at first through the use of impersonation, action, and dialogue by a narrator and then through the assumption of each of the roles by a different person. A closely related theory traces theater to those dances that are primarily rhythmical and gymnastic or that are imitations of animal movements and sounds.

31. What does the passage mainly discuss?

- (A) The origins of theater
- (B) The role of ritual in modern dance
- (C) The importance of storytelling
- (D) The variety of early religious activities

32. The word "they" in line 4 refers to

- (A) seasonal changes
- (B) natural forces
- (C) theories
- (D) human beings

33. What aspect of drama does the author discuss in the first paragraph?

- (A) The reason drama is often unpredictable
- (B) The seasons in which dramas were performed
- (C) The connection between myths and dramatic plots
- (D) The importance of costumes in early drama

34. Which of the following is NOT mentioned as a common element of theater and ritual?

- (A) Dance
- (B) Costumes
- (C) Music
- (D) Magic

35. The word "considerable" in line 15 is closest in meaning to

- (A) thoughtful
- (B) substantial
- (C) relational
- (D) ceremonial

36. The word "enactment" in line 15 is closest in meaning to

- (A) establishment
- (B) performance
- (C) authorization
- (D) season

37. The word "they" in line 16 refers to

- (A) mistakes

- (B) costumes
- (C) animals
- (D) performers

38. According to the passage, what is the main difference between ritual and drama?

- (A) Ritual uses music whereas drama does not.
- (B) Ritual is shorter than drama.
- (C) Ritual requires fewer performers than drama.
- (D) Ritual has a religious purpose and drama does not.

39. The passage supports which of the following statements?

- (A) No one really knows how the theater began.
- (B) Myths are no longer represented dramatically.
- (C) Storytelling is an important part of dance.
- (D) Dramatic activities require the use of costumes.

40. Where in the passage does the author discuss the separation of the stage and the audience?

- (A) Lines 8-9
- (B) Lines 12-14
- (C) Lines 19-20
- (D) Lines 22-24

#### **Questions 41-50**

Staggering tasks confronted the people of the United States, North and South, when the Civil War ended. About a million and a half soldiers from both sides had to be demobilized, readjusted to civilian life, and reabsorbed by the devastated economy. Civil government also had to be put back on a peacetime basis and interference from the military had to be stopped.

The desperate plight of the South has eclipsed the fact that reconstruction had to be undertaken also in the North, though less spectacularly. Industries had to adjust to peacetime conditions: factories had to be retooled for civilian needs.

Financial problems loomed large in both the North and the South. The national debt had shot up from a modest \$65 million in 1861, the year the war started, to nearly \$3 billion in 1865, the year the war ended. This was a colossal sum for those days but one that a prudent government could pay. At the same time, war taxes had to be reduced to less burdensome levels.

Physical devastation caused by invading armies, chiefly in the South and border states, had to be repaired. This herculean task was ultimately completed, but with discouraging slowness.

Other important questions needed answering. What would be the future of the four million Black people who were freed from slavery? On what basis were the Southern states to be brought back into the Union?

What of the Southern leaders, all of whom were liable to charges of treason? One of these leaders, Jefferson Davis, president of the Southern Confederacy, was the subject of an insulting popular Northern song, "Hang Jeff Davis from a Sour Apple Tree", and even children sang it. Davis was temporarily chained in his prison cell during the early days of his two-year imprisonment. But he and the other Southern



leaders were finally released, partly because it was unlikely that a jury from Virginia, a Southern Confederate state, would convict them. All the leaders were finally pardoned by President Johnson in 1868 in an effort to help reconstruction efforts proceed with as little bitterness as possible.

41. What does the passage mainly discuss?
- (A) Wartime expenditures
  - (B) Problems facing the United States after the war
  - (C) Methods of repairing the damage caused by the war
  - (D) The results of government efforts to revive the economy
42. The word "Staggering" in line 1 is closest in meaning to
- (A) specialized
  - (B) confusing
  - (C) various
  - (D) overwhelming
43. The word "devastated" in line 3 is closest in meaning to
- (A) developing
  - (B) ruined
  - (C) complicated
  - (D) fragile
44. According to the passage, which of the following statements about the damage in the South is correct?
- (A) It was worse than in the North.
  - (B) The cost was less than expected.
  - (C) It was centered in the border states.
  - (D) It was remedied rather quickly.
45. The passage refers to all of the following as necessary steps following the Civil War EXCEPT
- (A) helping soldiers readjust
  - (B) restructuring industry
  - (C) returning government to normal
  - (D) increasing taxes
46. The word "task" in line 15 refers to
- (A) raising the tax level
  - (B) sensible financial choices
  - (C) wise decisions about former slaves
  - (D) reconstruction of damaged areas
47. Why does the author mention a popular song in lines 22-23?
- (A) To give an example of a Northern attitude towards the South
  - (B) To illustrate the Northern love of music
  - (C) To emphasize the cultural differences between the North and the South
  - (D) To compare the Northern and Southern presidents
48. The word "them" in line 26 refers to
- (A) charges
  - (B) leaders

(C) days

(D) irons

49. Which of the following can be inferred from the phrase "...it was unlikely that a jury from Virginia, a Southern Confederate state, would convict them" (lines 25-26)?

(A) Virginians felt betrayed by Jefferson Davis.

(B) A popular song insulted Virginia.

(C) Virginians were loyal to their leaders.

(D) All of the Virginia military leaders had been put in chains.

50. It can be inferred from the passage that President Johnson pardoned the Southern leaders in order to

(A) raise money for the North

(B) repair the physical damage in the South

(C) prevent Northern leaders from punishing more Southerners

(D) help the nation recover from the war

## 1995-10

### Questions 1-13

Atmospheric pressure can support a column of water up to 10 meters high. But plants can move water much higher, the sequoia tree can pump water to its very top, more than 100 meters above the ground. Until the end of the nineteenth century, the movement of water's in trees and other tall plants was a mystery. Some botanists hypothesized that the living cells of plants acted as pumps, but many experiments demonstrated that the stems of plants in which all the cells are killed can still move water to appreciable heights. Other explanations for the movement of water in plants have been based on root pressure, a push on the water from the roots at the bottom of the plant. But root pressure is not nearly great enough to push water to the tops of tall trees, Furthermore, the conifers, which are among the tallest trees have unusually low root pressures.

If water is not pumped to the top of a tall tree, and if it is not pushed, to the top of a tall tree, then we may ask. How does it get there? According to the currently accepted cohesion-tension theory, water is pulled there. The pull on a rising column of water in a plant results from the evaporation of water at the top of the plant. As water is lost from the surface of the leaves, a negative pressure or tension is created. The evaporated water is replaced by water moving from inside the plant in unbroken columns that extend from the top of a plant to its roots. The same forces that create surface tension in any sample of water are responsible for the maintenance of these unbroken columns of water. When water is confined in tubes of very small bore, the forces of cohesion ( the attraction between water molecules) are so great that the strength of a column of water compares with the strength of a steel wire of the same diameter. This cohesive strength permits columns of water to be pulled to great heights without being broken.

1. How many theories does the author mention?

(A) One

- (B) Two
  - (C) Three
  - (D) Four
2. The passage answers which of the following questions ?
- (A) What is the effect of atmospheric pressure on foliage?
  - (B) When do dead cells harm plant growth?
  - (C) How does water get to the tops of trees?
  - (D) Why is root pressure weak?
3. The word "demonstrated" in line 6 is closest in meaning to
- (A) ignored
  - (B) showed
  - (C) disguised
  - (D) distinguished
4. What do the experiments mentioned in lines 6-8 prove?
- (A) Plant stems die when deprived of water.
  - (B) Cells in plant stems do not pump water.
  - (C) Plants cannot move water to high altitudes.
  - (D) Plant cells regulate pressure within stems.
5. How do botanists know that root pressure is not the only force that moves water in plants?
- (A) Some very tall trees have weak root pressure.
  - (B) Root pressures decrease in winter.
  - (C) Plants can live after their roots die.
  - (D) Water in a plant's roots is not connected to water in its stem.
6. Which of the following statements does the passage support?
- (A) Water is pushed to the tops of trees.
  - (B) Botanists have proven that living cells act as pumps.
  - (C) Atmospheric pressure draws water to the tops of tall trees.
  - (D) Botanists have changed their theories of how water moves in plants.
7. The word "it" in line 13 refers to
- (A) top
  - (B) tree
  - (C) water
  - (D) cohesion-tension theory
8. The word "there" in line 15 refers to
- (A) treetops
  - (B) roots
  - (C) water columns
  - (D) tubes
9. What causes the tension that draws water up a plant?
- (A) Humidity
  - (B) Plant growth
  - (C) Root pressure
  - (D) Evaporation
10. The word "extend" in line 19 is closest in meaning to

- (A) stretch
- (B) branch
- (C) increase
- (D) rotate

11. According to the passage, why does water travel through plants in unbroken columns?

- (A) Root pressure moves the water very rapidly.
- (B) The attraction between water molecules is strong.
- (C) The living cell of plants push the water molecules together.
- (D) Atmospheric pressure supports the columns.

12. Why does the author mention steel wire in line 24?

- (A) To illustrate another means of pulling water
- (B) To demonstrate why wood is a good building material
- (C) To indicate the size of a column of water
- (D) To emphasize the strength of cohesive forces in water

13. Where in the passage does the author give an example of a plant with low root pressure?

- (A.) Lines 3-5
- (B) Lines 6-8
- (C) Lines 11-12
- (D) Lines 13-14

#### **Questions 14-22**

Mass transportation revised the social and economic fabric of the American city in three fundamental ways. It catalyzed physical expansion, it sorted out people and land uses, and it accelerated the inherent instability of urban life. By opening vast areas of unoccupied land for residential expansion, the omnibuses, horse railways, commuter trains, and electric trolleys pulled settled regions outward two to four times more distant from city centers than they were in the premodern era. In 1850, for example, the borders of Boston lay scarcely two miles from the old business district by the turn of the century the radius extended ten miles. Now those who could afford it could live far removed from the old city center and still commute there for work, shopping, and entertainment. The new accessibility of land around the periphery of almost every major city sparked an explosion of real estate development and fueled what we now know as urban sprawl. Between 1890 and 1920, for example, some 250,000 new residential lots were recorded within the borders of Chicago, most of them located in outlying areas. Over the same period, another 550,000 were plotted outside the city limits but within the metropolitan area. Anxious to take advantage of the possibilities of commuting, real estate developers added 800,000 potential building sites to the Chicago region in just thirty years lots that could have housed five to six million people.

Of course, many were never occupied; there was always a huge surplus of subdivided, but vacant, land around Chicago and other cities. These excesses underscore a feature of residential expansion related to the growth of mass transportation urban sprawl was essentially unplanned. It was carried out by thousands of small investors who paid little heed to coordinated land use or to future

land users. Those who purchased and prepared land for residential purposes, particularly and near or outside city borders where transit lines and middle-class inhabitants were anticipated, did so to create demand as much as to respond to it. Chicago is a prime example of this process. Real estate subdivision there proceeded much faster than population growth.

14. With which of the following subjects is the passage mainly concerned?
- (A) Types of mass transportation
  - (B) Instability of urban life
  - (C) How supply and demand determine land use
  - (D) The effects of mass trans- city portation on urban expansion
15. The author mentions all of the following as effects of mass transportation on cities EXCEPT
- (A) growth in city area
  - (B) separation of commercial and residential districts
  - (C) changes in life in the inner city
  - (D) increasing standards of living.
16. The word "vast" in line 4 is closest in meaning to
- (A) large
  - (B) basic
  - (C) new
  - (D) urban
17. The word "sparked" in line 12 is closest in meaning to
- (A) brought about
  - (B) surrounded
  - (C) sent out
  - (D) followed
18. Why does the author mention both Boston and Chicago?
- (A) To demonstrate positive and negative effects of growth
  - (B) To show that mass transit changed many cities
  - (C) To exemplify cities with and without mass transportation
  - (D) To contrast their rates of growth
19. The word "potential" in line 18 is closest in meaning to
- (A) certain
  - (B) popular
  - (C) improved
  - (D) possible
20. The word "many" in line 21 refers to
- (A) people
  - (B) lots-
  - (C) years
  - (D) developers
21. According to the passage, what was one disadvantage of residential expansion?
- (A) It was expensive.
  - (B) It happened too slowly.

- (C) It was unplanned.
  - (D) It created a demand for public transportation.
22. The author mentions Chicago in the second paragraph as an example of a city
- (A) that is large
  - (B) that is used as a model for land development
  - (C) where land development exceeded population growth
  - (D) with an excellent mass transportation system

**Questions 23-33**

The preservation of embryos and juveniles is a rare occurrence in the fossil record. The tiny, delicate skeletons are usually scattered by scavengers or destroyed by weathering before they can be fossilized. Ichthyosaurs had a higher chance of being preserved than did terrestrial creatures because, as marine animals, they tended to live in environments less subject to erosion. Still, their fossilization required a suite of factors: a slow rate of decay of soft tissues, little scavenging by other animals, a lack of swift currents and waves to jumble and carry away small bones, and fairly rapid burial. Given these factors, some areas have become a treasury of well-preserved ichthyosaur fossils.

The deposits at Holzmaden, Germany, present an interesting case for analysis. The ichthyosaur remains are found in black, bituminous marine shales deposited about 190 million years ago. Over the years, thousands of specimens of marine reptiles, fish, and invertebrates have been recovered from these rocks. The quality of preservation is outstanding, but what is even more impressive is the number of ichthyosaur fossils containing preserved embryos. Ichthyosaurs with embryos have been reported from 6 different levels of the shale in a small area around Holzmaden, suggesting that a specific site was used by large numbers of ichthyosaurs repeatedly over time. The embryos are quite advanced in their physical development; their paddles, for example, are already well formed. One specimen is even preserved in the birth canal. In addition, the shale contains the remains of many newborns that are between 20 and 30 inches long.

Why are there so many pregnant females and young at Holzmaden when they are so rare elsewhere? The quality of preservation is almost unmatched and quarry operations have been carried out carefully with an awareness of the value of the fossils. But these factors do not account for the interesting question of how there came to be such a concentration of pregnant ichthyosaurs in a particular place very close to their time of giving birth.

23. The passage supports which of the following conclusions?
- (A) Some species of ichthyosaurs decayed more rapidly than other species.
  - (B) Ichthyosaur newborns are smaller than other newborn marine reptiles.
  - (C) Ichthyosaurs were more advanced than terrestrial creatures.
  - (D) Ichthyosaurs may have gathered at Holzmaden to give birth.
24. The word "they" in line 3 refers to
- (A) skeletons

- (B) scavengers
  - (C) creatures
  - (D) environments
25. All of the following are mentioned as factors that encourage fossilization EXCEPT the
- (A) speed of burying
  - (B) conditions of the water
  - (C) rate at which soft tissues decay
  - (D) cause of death of the animal
26. Which of the following is true of the fossil deposits discussed in the passage ?
- (A) They include examples of newly discovered species.
  - (B) They contain large numbers of well-preserved specimens.
  - (C) They are older than fossils found in other places.
  - (D) They have been analyzed more carefully than other fossils.
27. The word "outstanding" in line 15 is closest in meaning to
- (A) extensive
  - (B) surprising
  - (C) vertical
  - (D) excellent
28. The word "site" in line 19 is closest in meaning to
- (A) example
  - (B) location
  - (C) development
  - (D) characteristic
29. Why does the author mention the specimen preserved in the birth canal (line 21-22)?
- (A) To illustrate that the embryo fossils are quite advanced in their development
  - (B) To explain why the fossils are well preserved
  - (C) To indicate how the ichthyosaurs died
  - (D) To prove that ichthyosaurs are marine animals
30. The word "they" in line 25 refers to
- (A) pregnant females and young
  - (B) quarry operations
  - (C) the value of the fossils
  - (D) these factors
31. The phrase "account for" in line 27 is closest in meaning to
- (A) record
  - (B) describe
  - (C) equal
  - (D) explain
32. Which of the following best expresses the relationship between the first and second paragraphs?
- (A) The first paragraph describes a place which the second paragraph describes a field of study.
  - (B) The first paragraph defines the terms that are used in the second paragraph
  - (C) The second paragraph describes a specific instance of the general topic discussed in the first paragraph

(D) The second paragraph presents information that contrasts with the information given in the first paragraph

33. Where in the passage does the author mention the variety of fossils found at Holzmaden?

- (A) Line 1
- (B) Lines 3-5
- (C) Lines 13-15
- (D) Lines 21-23

**Questions 34-41**

The Lewis and Clark expedition, sponsored by President Jefferson, was the most important official examination of the high plains and the Northwest before the War of 1812. The President's secretary, Captain Meriwether Lewis, had been instructed to "explore the Missouri River, and such principal streams of it as, by its course and communication with the waters of the Pacific Ocean. . . may offer the most direct and practicable water communication across the continent, for the purposes of commerce." Captain William Clark, the younger brother of famed George Rogers Clark, was invited to share the command of the exploring party.

Amid rumors that there were prehistoric mammoths wandering around the unknown region and that somewhere in its wilds was a mountain of rock salt 80 by 45 miles in extent, the two captains set out. The date was May 14, 1801. Their point of departure was the mouth of the Wood River, just across the Mississippi from the entrance of the Missouri River. After toiling up the Missouri all summer, the group wintered near the Mandan villages in the center of what is now North Dakota. Resuming their journey in the spring of 1805. The men worked their way along the Missouri to its source and then crossed the mountains of western Montana and Idaho. Picking up a tributary of the Columbia River, they continued westward until they reached the Pacific Ocean, where they stayed until the following spring.

Lewis and Clark brought back much new information, including the knowledge that the continent was wider than originally supposed. More specifically, they learned a good deal about river drainages and mountain barriers. They ended speculation that an easy coast-to-coast route existed via the Missouri-Columbia River systems, and their reports of the climate, the animals and birds, the trees and plants, and the Indians of the West -- though not immediately published -- were made available to scientists.

34. With what topic is the passage primarily concerned?

- (A) The river systems of portions of North America
- (B) Certain geological features of the North America
- (C) An exploratory trip sponsored by the United States government
- (D) The discovery of natural resources in the United States

35. According to the passage, the primary purpose of finding a water route across the continent was to

- (A) gain easy access to the gold and other riches of the Northwest
- (B) become acquainted with the inhabitants of the West
- (C) investigate the possibility of improved farmland in the West



- (D) facilitate the movement of commerce across the continent
36. The river Meriwether Lewis was instructed to explore was the
- (A) Wood
  - (B) Missouri
  - (C) Columbia
  - (D) Mississippi
37. According to the passage ,the explorers spent their first winter in what would become
- (A) North Dakota
  - (B) Missouri
  - (C) Montana
  - (D) Idaho
38. The author states that Lewis and Clark studied all of the following characteristics of the explored territories EXCEPT
- (A) mineral deposits
  - (B) the weather
  - (C) animal life
  - (D) native vegetation
39. The phrase "Picking up" in line 20 could best be replaced by which of the following?
- (A) Searching for
  - (B) Following
  - (C) Learning about
  - (D) Lifting
40. It can be Inferred from the passage that prior to the Lewis and Clark expedition the size of the continent had been
- (A) of little interest
  - (B) underestimated
  - (C) known to native inhabitants of the West
  - (D) unpublished but known to most scientists
41. Where in the passage does the author refer to the explorers' failure to find an easy passageway to the western part of the continent?
- (A) Lines 1-3
  - (B) Lines 7-9
  - (C) Lines 18-20
  - (D) Lines 23-25

**Question 42-50**

For a century and a half the piano has been one of the most popular solo instruments for Western music. Unlike string and wind instruments, the piano is completely self-sufficient, as it is able to play both the melody and its accompanying harmony at the same time. For this reason, it became the favorite household instrument of the nineteenth century.

The ancestry of the piano can be traced to the early keyboard instruments of the fifteenth and sixteenth centuries-the spinet, the dulcimer, and the virginal. In the seventeenth century the organ, the clavichord, and the harpsichord became the chief

instruments of the keyboard group, a supremacy they maintained until the piano supplanted them at the end of the eighteenth century. The clavichord's tone was metallic and never powerful, nevertheless, because of the variety of tone possible to it, many composers found the clavichord a sympathetic instrument for intimate chamber music. The harpsichord with its bright, vigorous tone was the favorite instrument for supporting the bass of the small orchestra of the period and for concert use but the character of the tone could not be varied save by mechanical or structural devices .

The piano was perfected in the early eighteenth century by a harpsichord maker in Italy (though musicologists point out several previous instances of the instrument). This instrument was called a piano e forte (soft Mid loud), to indicate its dynamic versatility; its strings were struck by a recoiling hammer with a felt-padded head. The wires were much heavier in the earlier instruments. A series of mechanical improvements continuing well into the nineteenth century, including the introduction of pedals to sustain tone or to soften it, the perfection of a metal frame, and steel wire of the finest quality, finally produced an instrument capable of myriad tonal effects from the most delicate harmonies to an almost orchestral fullness of sound, from a liquid, singing tone to sharp, percussive brilliance.

42. What does the passage mainly discuss ?
- (A) The historical development of the piano
  - (B) The quality of tone produced by various keyboard instrument
  - (C) The uses of keyboard instruments in various types of compositions
  - (D) The popularity of the piano with composers
43. Which of the following instruments was widely used before the seventeenth century?
- (A) The harpsichord
  - (B) The spinet
  - (C) The clavichord
  - (D) The organ
44. The words "a supremacy" in line 9 are closest in meaning to
- (A ) a suggestion
  - (B) an improvement
  - (C) a dominance
  - (D) a development
- 45.The word "supplanted" in line 10 is closest in meaning to
- (A) supported
  - (B) promoted
  - (C) replaced
  - (D) dominated
- 46.The word "it" in line 12 refers to the
- (A) variety
  - (B) music
  - (C) harpsichord
  - (D) clavichord
- 47.According to the passage, what deficiency did the harpsichord have?

- (A) It was fragile.
- (B) It lacked variety in tone.
- (C) It sounded metallic.
- (D) It could not produce a strong sound.

48. Where in the passage does the author provide a translation?

- (A) Lines 4-5
- (B) Lines 13-17
- (C) Lines 20-22
- (D) Lines 23-28

49. According to the information in the third paragraph, which of the following improvements made it possible to lengthen the tone produced by the piano?

- (A) The introduction of pedals
- (B) The use of heavy wires
- (C) The use of felt-padded hammerheads
- (D) The metal frame construction

50. The word "myriad" in line 26 is closest in meaning to

- (A) noticeable
- (B) many
- (C) loud
- (D) unusual

## 1995-12

### Questions 1-10

Another early Native American tribe in what is now the southwestern part of the United States was the Anasazi. By A. D. 800 the Anasazi Indians were constructing multistory pueblos—massive, stone apartment compounds. Each one was virtually a stone town, which is why the Spanish would later call them pueblos, the Spanish word for towns. These pueblos represent one of the Anasazis' supreme achievements. At least a dozen large stone houses took shape below the bluffs of Chaco Canyon in northwest New Mexico. They were built with masonry walls more than a meter thick and adjoining apartments to accommodate dozens, even hundreds, of families. The largest, later named Pueblo Bonito (Pretty Town) by the Spanish, rose in five terraced stories, contained more than 800 rooms, and could have housed a population of 1,000 or more.

Besides living quarters, each pueblo included one or more kivas—circular underground chambers faced with stone. They functioned as sanctuaries where the elders met to plan festivals, perform ritual dances, settle pueblo affairs, and impart tribal lore to the younger generation. Some kivas were enormous. Of the 30 or so at pueblo Bonito, two measured 20 meters across. They contained niches for ceremonial objects, a central fire pit, and holes in the floor for communicating with the spirits of tribal ancestors.

Each pueblo represented an astonishing amount of well-organized labor. Using only stone and wood tools, and without benefit of wheels or draft animals, the builders

quarried ton upon ton of sandstone from the canyon walls, cut it into small blocks, hauled the blocks to the construction site, and fitted them together with mud mortar. Roof beams of pine or fir had to be carried from logging areas in the mountain forests many kilometers away. Then, to connect the pueblos and to give access to the surrounding tableland, the architects laid out a system of public roads with stone staircases for ascending cliff faces. In time, the roads reached out to more than 80 satellite villages within a 60-kilometer radius.

1. The paragraph preceding the passage most
  - (A) how pueblos were built
  - (B) another Native American tribe
  - (C) Anasazi crafts and weapons
  - (D) Pueblo village in New Mexico
2. What is the main topic of the passage?
  - (A) The Anasazi pueblos
  - (B) Anasazi festivals of New Mexico
  - (C) The organization of the Anasazi tribe
  - (D) The use of Anasazi sanctuaries
3. The word "supreme" in line 5 is closest in meaning to
  - (A) most common
  - (B) most outstanding
  - (C) most expensive
  - (D) most convenient
4. The word "They" in line 7 refers to
  - (A) houses
  - (B) bluffs
  - (C) walls
  - (D) families
5. The author mentions that Pueblos bonito had more than 800 rooms as an example of which of the following?
  - (A) How overcrowded the pueblos could be
  - (B) How many ceremonial areas it contained
  - (C) How much sandstone was needed to build it
  - (D) How big a pueblo could be
6. The word "settle" in line 14 is closest in meaning to
  - (A) sink
  - (B) decide
  - (C) clarify
  - (D) locate
7. It can be inferred from the passage that building a pueblo probably
  - (A) required many workers
  - (B) cost a lot of money
  - (C) involved the use of farm animals
  - (D) relied on sophisticated technology

8. The word "ascending" in line 26 is closest in meaning to
- (A) arriving at
  - (B) carving
  - (C) connecting
  - (D) climbing
9. It can be inferred from the passage that in addition to pueblos the Anasazis were skilled at building which of following?
- (A) Roads
  - (B) Barns
  - (C) Monuments
  - (D) Water systems
10. The pueblos are considered one of the Anasazis' supreme achievements for all of the following reasons EXCEPT that they were
- (A) very large
  - (B) located in forests
  - (C) built with simple tools
  - (D) connected in a systematic way

**Questions 11-21**

Accustomed though we are to speaking of the films made before 1927 as "silent", the film has never been, in the full sense of the word, silent. From the very beginning, music was regarded as an indispensable accompaniment; when the Lumiere films were shown at the first public film exhibition in the United States in February 1896, they were accompanied by piano improvisations on popular tunes. At first, the music played bore no special relationship to the films; an accompaniment of any kind was sufficient. Within a very short time, however, the incongruity of playing lively music to a solemn film became apparent, and film pianists began to take some care in matching their pieces to the mood of the film.

As movie theaters grew in number and importance, a violinist, and perhaps a cellist, would be added to the pianist in certain cases, and in the larger movie theaters small orchestras were formed. For a number of years the selection of music for each film program rested entirely in the hands of the conductor or leader of the orchestra, and very often the principal qualification for holding such a position was not skill or taste so much as the ownership of a large personal library of musical pieces. Since the conductor seldom saw the films until the night before they were to be shown (if, indeed, the conductor was lucky enough to see them then), the musical arrangement was normally improvised in the greatest hurry.

To help meet this difficulty, film distributing companies started the practice of publishing suggestions for musical accompaniments. In 1909, for example, the Edison Company began issuing with their films such indications of mood as "pleasant", "sad", "lively". The suggestions became more explicit, and so emerged the musical cue sheet containing indications of mood, the titles of suitable pieces of music, and precise directions to show where one piece led into the next.

Certain films had music especially composed for them. The most famous of these

early special scores was that composed and arranged for D. W. Griffith's film *Birth of a Nation*, which was released in 1915.

11. The passage mainly discusses music that was
  - (A) performed before the showing of a film
  - (B) played during silent films
  - (C) specifically composed for certain movie theaters
  - (D) recorded during film exhibitions
12. What can be inferred that the passage about the majority of films made after 1927?
  - (A) They were truly "silent".
  - (B) They were accompanied by symphonic orchestras.
  - (C) They incorporated the sound of the actors' voices.
  - (D) They corresponded to specific musical compositions.
13. The word "solemn" in line 7 is closest in meaning to
  - (A) simple
  - (B) serious
  - (C) short
  - (D) silent
14. It can be inferred that orchestra conductors who worked in movie theaters needed to
  - (A) be able to play many instruments
  - (B) have pleasant voices
  - (C) be familiar with a wide variety of music
  - (D) be able to compose original music
15. The word "them" in line 17 refers to
  - (A) years
  - (B) hands
  - (C) pieces
  - (D) films
16. According to the passage, what kind of business was the Edison Company?
  - (A) It produced electricity.
  - (B) It distributed films.
  - (C) It published musical arrangements.
  - (D) It made musical instruments.
17. It may be inferred from the passage that the first musical cue sheets appeared around
  - (A) 1896
  - (B) 1909
  - (C) 1915
  - (D) 1927
18. Which of the following notations is most likely to have been included on a musical cue sheet of the early 1900's?
  - (A) "Calm, peaceful"
  - (B) "Piano, violin"
  - (C) "Key of C major"
  - (D) "Directed by D. W. Griffith"

19. The word "composed" in line 26 is closest in meaning to  
(A) selected  
(B) combined  
(C) played  
(D) created
20. The word "scores" in line 26 is closest in meaning to  
(A) totals  
(B) successes  
(C) musical compositions  
(D) groups of musicians
21. The passage probably continues with a discussion of  
(A) famous composers of the early twentieth century  
(B) other films directed by D. W. Griffith  
(C) silent films by other directors  
(D) the music in Birth of a Nation

**Questions 22-31**

The Earth comprises three principal layers: the dense, iron-rich core, the mantle made of silicate rocks that are semimolten at depth, and the thin, solid-surface crust. There are two kinds of crust, a lower and denser oceanic crust and an upper, lighter continental crust found over only about 40 percent of the Earth's surface. The rocks of the crust are of very different ages. Some continental rocks are over 3,000 million years old, while those of the ocean flow are less than 200 million years old. The crusts and the top, solid part of the mantle, totaling about 70 to 100 kilometers in thickness, at present appear to consist of about 15 rigid plates, 7 of which are very large. These plates move over the semimolten lower mantle to produce all of the major topographical features of the Earth. Active zones where intense deformation occurs are confined to the narrow, interconnecting boundaries of contact of the plates.

There are three main types of zones of contact: spreading contacts where plates move apart, converging contacts where plates move towards each other, and transform contacts where plates slide past each other. New oceanic crust is formed along one or more margins of each plate by material issuing from deeper layers of the Earth's crust, for example, by volcanic eruptions of lava at midocean ridges. If at such a spreading contact the two plates support continents, a rift is formed that will gradually widen and become flooded by the sea. The Atlantic Ocean formed like this as the American and Afro-European plates move in opposite directions. At the same time at margins of converging plates, the oceanic crust is being reabsorbed by being subducted into the mantle and remelted beneath the ocean trenches. When two plates carrying continents collide, the continental blocks, too light to be drawn down, continue to float and therefore buckle to form a mountain chain along the length of the margin of the plates.

22. The word "comprises" in line 1 is closest in meaning to  
(A) adapts to  
(B) benefits from

- (C) consists of  
(D) focuses on
23. According to the passage, on approximately what percent of the Earth's surface is the continental crust found?  
(A) 15  
(B) 40  
(C) 70  
(D) 100
24. The word "which" in line 8 refers to  
(A) crusts  
(B) kilometers  
(C) plates  
(D) continents
25. The word "intense" in line 10 is closest in meaning to  
(A) surface  
(B) sudden  
(C) rare  
(D) extreme
26. What does the second paragraph of the passage mainly discuss?  
(A) The major mountain chains of the Earth  
(B) Processes that create the Earth's surface features  
(C) The composition of the ocean floors  
(D) The rates at which continents move
27. Which of the following drawings best represents a transform contact (line 13-14)?
28. The word "margins" in line 15 is closest in meaning to  
(A) edges  
(B) peaks  
(C) interiors  
(D) distances
29. The word "support" in line 17 is closest in meaning to  
(A) separate  
(B) create  
(C) reduce  
(D) hold
30. According to the passage, mountain range are formed when  
(A) the crust is remelted  
(B) two plates separate  
(C) a rift is flooded  
(D) continental plates collide
31. Where in the passage does the author describe how oceans are formed?  
(A) Lines 3-4  
(B) Lines 6-8  
(C) Lines 16-18  
(D) Lines 19-21



### **Questions 32-40**

Coincident with concerns about the accelerating loss of species and habitats has been a growing appreciation of the importance of biological diversity, the number of species in a particular ecosystem, to the health of the Earth and human well-being. Much has been written about the diversity of terrestrial organisms, particularly the exceptionally rich life associated with tropical rain-forest habitats. Relatively little has been said, however, about diversity of life in the sea even though coral reef systems are comparable to rain forests in terms of richness of life.

An alien exploring Earth would probably give priority to the planet's dominants, most-distinctive feature-the ocean. Humans have a bias toward land that sometimes gets in the way of truly examining global issues. Seen from far away, it is easy to realize that landmasses occupy only one-third of the Earth's surface. Given that two-thirds of the Earth's surface is water and that marine life lives at all levels of the ocean, the total three-dimensional living space of the ocean is perhaps 100 times greater than that of land and contains more than 90 percent of all life on Earth even though the ocean has fewer distinct species.

The fact that half of the known species are thought to inhabit the world's rain forests does not seem surprising, considering the huge numbers of insects that comprise the bulk of the species. One scientist found many different species of ants in just one tree from a rain forest. While every species is different from every other species, their genetic makeup constrains them to be insects and to share similar characteristics with 750,000 species of insects. If basic, broad categories such as phyla and classes are given more emphasis than differentiating between species, then the greatest diversity of life is unquestionably the sea. Nearly every major type of plant and animal has some representation there.

To appreciate fully the diversity and abundance of life in the sea, it helps to think small. Every spoonful of ocean water contains life, on the order of 100 to 100,000 bacterial cells plus assorted microscopic plants and animals, including larvae of organisms ranging from sponges and corals to starfish and clams and much more.

32. What is the main point of the passage?
- (A) Humans are destroying thousands of species.
  - (B) There are thousands of insect species.
  - (C) The sea is even richer in life than the rain forests.
  - (D) Coral reefs are similar to rain forests.
33. The word "appreciation" in line 2 is closest in meaning to
- (A) ignorance
  - (B) recognition
  - (C) tolerance
  - (D) forgiveness
34. Why does the author compare rain forests and coral reefs (lines 4-7)?
- (A) They are approximately the same size.
  - (B) They share many similar species.

- (C) Most of the their inhabitants require water.  
(D) Both have many different forms of life.
35. The word "bias" in line 9 is closest in meaning to  
(A) concern  
(B) disadvantage  
(C) attitude  
(D) prejudice
36. The passage suggests that most rain forest species are  
(A) insects  
(B) bacteria  
(C) mammals  
(D) birds
37. The word "there" in line 24 refers to  
(A) the sea  
(B) the rain forests  
(C) a tree  
(D) the Earth's surface
38. The author argues that there is more diversity of life in the sea than in the rain forests because  
(A) more phyla and classes of life are represented in the sea  
(B) there are too many insects to make meaningful distinctions  
(C) many insect species are too small to divide into categories  
(D) marine life-forms reproduce at a faster rate
39. Which of the following is NOT mentioned as an example of microscopic sea life?  
(A) Sponges  
(B) Coral  
(C) Starfish  
(D) Shrimp
40. Which of the following conclusions is supported by the passage?  
(A) Ocean life is highly adaptive.  
(B) More attentions needs to be paid to preserving ocean species and habitats.  
(C) Ocean life is primarily composed of plants.  
(D) The sea is highly resistant to the damage done by pollutants.

**Questions 41-50**

What geologists call the Basin and Range Province in the United States roughly coincides in its northern portions with the geographic province known as the Great Basin. The Great Basin is hemmed in on the west by the Sierra Nevada and on the east by the Rocky Mountains; it has no outlet to the sea. The prevailing winds in the Great Basin are from the west. Warm, moist air from the Pacific Ocean is forced upward as it crosses the Sierra Nevada. At the higher altitudes it cools and the moisture it carries is precipitated as rain or snow on the western slopes of the mountains. That which reaches the Basin is air wrung dry of moisture. What little water falls there as rain or snow, mostly in the winter months, evaporates on the broad, flat desert floors. It is, therefore, an environment in which organisms battle for survival. Along the rare

watercourses, cottonwoods and willows eke out a sparse existence. In the upland ranges, pinon pines and junipers struggle to hold their own.

But the Great Basin has not always been so arid. Many of its dry, closed depressions were once filled with water. Owens Valley, Panamint Valley, and Death Valley were once a string of interconnected lakes. The two largest of the ancient lakes of the Great Basin were Lake Lahontan and Lake Bonneville. The Great Salt Lake is all that remains of the latter, and Pyramid Lake is one of the last briny remnants of the former.

There seem to have been several periods within the last tens of thousands of years when water accumulated in these basins. The rise and fall of the lakes were undoubtedly linked to the advances and retreats of the great ice sheets that covered much of the northern part of the North American continent during those times. Climatic changes during the Ice ages sometimes brought cooler, wetter weather to midlatitude deserts worldwide, including those of the Great Basin. The broken valleys of the Great Basin provided ready receptacles for this moisture.

41. What is the geographical relationship between the Basin and Range Province and the Great Basin?

- (A) The Great Basin is west of the Basin and Range Province.
- (B) The Great Basin is larger than the Basin and Range Province.
- (C) The Great Basin is in the northern part of the Basin and Range Province.
- (D) The Great Basin is mountainous; the Basin and Range Province is flat desert.

42. According to the passage, what does the great Basin lack?

- (A) Snow
- (B) Dry air
- (C) Winds from the west
- (D) Access to the ocean

43. The word "prevailing" in line 4 is closest in meaning to

- (A) most frequent
- (B) occasional
- (C) gentle
- (D) most dangerous

44. It can be inferred that the climate in the Great Basin is dry because

- (A) the weather patterns are so turbulent
- (B) the altitude prevents precipitation
- (C) the winds are not strong enough to carry moisture
- (D) precipitation falls in the nearby mountains

45. The word "it" in line 5 refers to

- (A) Pacific Ocean
- (B) air
- (C) west
- (D) the Great Basin

46. Why does the author mention cottonwoods and willows in line 11?

- (A) To demonstrate that certain trees require a lot of water
- (B) To give examples of trees that are able to survive in a difficult environment

- (C) To show the beauty of the landscape of the Great Basin  
(D) To assert that there are more living organisms in the Great Basin than there used to be
47. Why does the author mention Owens Valley, Panamint Valley, and Death Valley in the second paragraph?  
(A) To explain their geographical formation  
(B) To give examples of depressions that once contained water  
(C) To compare the characteristics of the valleys with the characteristics of the lakes  
(D) To explain what the Great Basin is like today
48. The words "the former" in line 17 refer to  
(A) Lake Bonneville  
(B) Lake Lahontan  
(C) The Great Salt Lake  
(D) Pyramid Lake
49. The word "accumulated" in line 19 is closest in meaning to  
(A) dried  
(B) flooded  
(C) collected  
(D) evaporated
50. According to the passage, the Ice Ages often brought about  
(A) desert formation  
(B) warmer climates  
(C) broken valleys  
(D) wetter weather

## 1996-01

### Questions 1-9

In science, a theory is a reasonable explanation of observed events that are related. A theory often involves an imaginary model that helps scientists picture the way an observed event could be produced. A good example of this is found in the kinetic molecular theory, in which gases are pictured as being made up of many small particles that are in constant motion.

A useful theory, in addition to explaining past observations, helps to predict events that have not as yet been observed. After a theory has been publicized, scientists design experiments to test the theory. If observations confirm the scientists' predictions, the theory is supported. If observations do not confirm the predictions, the scientists must search further. There may be a fault in the experiment, or the theory may have to be revised or rejected.

Science involves imagination and creative thinking as well as collecting information and performing experiments. Facts by themselves are not science. As the mathematician Jules Henri Poincare said: "Science is built with facts just as a house is built with bricks, But a collection of facts cannot be called science any more than a pile of bricks can be called a house."

Most scientists start an investigation by finding out what other scientists have

learned about a particular problem. After known facts have been gathered, the scientist comes to the part of the investigation that requires considerable imagination. Possible solutions to the problem are formulated. These possible solutions are called hypotheses.

In a way, any hypothesis is a leap into the unknown. It extends the scientist's thinking beyond the known facts. The scientist plans experiments, performs calculations and makes observations to test hypotheses. For without hypotheses, further investigation lacks purpose and direction. When hypotheses are confirmed, they are incorporated into theories.

1. The word "related" in line 1 is closest in meaning to
  - (A) connected
  - (B) described
  - (C) completed
  - (D) identified
2. The word "this" in line 3 refers to
  - (A) a good example
  - (B) an imaginary model
  - (C) the kinetic molecular theory
  - (D) an observed event
3. According to the second paragraph, a useful theory is one that helps scientists to
  - (A) find errors in past experiments
  - (B) make predictions
  - (C) observe events
  - (D) publicize new findings
4. The word "supported" in line 9 is closest in meaning to
  - (A) finished
  - (B) adjusted
  - (C) investigated
  - (D) upheld
5. Bricks are mentioned in lines 14-16 to indicate how
  - (A) mathematicians approach science
  - (B) building a house is like performing experiments
  - (C) science is more than a collection of facts
  - (D) scientific experiments have led to improved technology
6. In the fourth paragraph, the author implies that imagination is most important to scientists when they
  - (A) evaluate previous work on a problem
  - (B) formulate possible solutions to a problem
  - (C) gather known facts
  - (D) close an investigation
7. In line 21, the author refers to a hypotheses as "a leap into the unknown" in order to show that hypotheses
  - (A) are sometimes ill-conceived
  - (B) can lead to dangerous resultss

- (C) go beyond available facts  
(D) require effort to formulate
8. In the last paragraph, what does the author imply a major function of hypotheses?  
(A) Sifting through known facts  
(B) Communicating a scientist's thoughts to others  
(C) Providing direction for scientific research  
(D) Linking together different theories
9. Which of the following statements is supported by the passage?  
(A) Theories are simply imaginary models of past events.  
(B) It is better to revise a hypothesis than to reject it.  
(C) A scientist's most difficult task is testing hypotheses.  
(D) A good scientist needs to be creative.

**Question 10-20**

By the mid-nineteenth century, the term "icebox" had entered the American language, but ice was still only beginning to affect the diet of ordinary citizens in the United States. The ice trade grew with the growth of cities. Ice was used in hotels, taverns, and hospitals, and by some forward-looking city dealers in fresh meat, fresh fish, and butter. After the Civil War (1860-1865), as ice used to refrigerate freight cars, it also came into household use. Even before 1880, half the ice sold in New York, Philadelphia, and Baltimore, and one-third of that sold in Boston and Chicago, went to families for their own use. This had become possible because a new household convenience, the icebox, a precursor of the modern refrigerator, had been invented.

Making an efficient icebox was not as easy as we might now suppose. In the early nineteenth century, the knowledge of the physics of heat, which was essential to a science of refrigeration, was rudimentary. The commonsense notion that the best icebox was one that prevented the ice from melting was of course mistaken, for it was the melting of the ice that performed the cooling. Nevertheless, early efforts to economize ice included wrapping the ice in blankets, which kept the ice from doing its job. Not until near the end of the nineteenth century did inventors achieve the delicate balance of insulation and circulation needed for an efficient icebox.

But as early as 1803, an ingenious Maryland farmer, Thomas Moore, had been on the right track. He owned a farm about twenty miles outside the city of Washington, for which the village of Georgetown was the market center. When he used an icebox of his own design to transport his butter to market, he found that customers would pass up the rapidly melting stuff in the tubs of his competitors to pay a premium price for his butter, still fresh and hard in neat, one-pound bricks. One advantage of his icebox, Moore explained, was that farmers would no longer have to travel to market at night in order to keep their produce cool.

10. What does the passage mainly discuss?  
(A) The influence of ice on the diet  
(B) The development of refrigeration  
(C) The transportation of goods to market

(D) Sources of ice in the nineteenth century

11. According to the passage, when did the word "icebox" become part of the language of the United States?

- (A) In 1803
- (B) Sometime before 1850
- (C) During the Civil War
- (D) Near the end of the nineteenth century

12. The phrase "forward-looking" in line 4 is closest in meaning to

- (A) progressive
- (B) popular
- (C) thrifty
- (D) well-established

13. The author mentions fish in line 5 because

- (A) many fish dealers also sold ice
- (B) fish was shipped in refrigerated freight cars
- (C) fish dealers were among the early commercial users of ice
- (D) fish was not part of the ordinary person's diet before the invention of the icebox

14. The word "it" in line 6 refers to

- (A) fresh meat
- (B) the Civil War
- (C) ice
- (D) a refrigerator

15. According to the passage, which of the following was an obstacle to the development of the icebox?

- (A) Competition among the owners of refrigerated freight cars
- (B) The lack of a network for the distribution of ice
- (C) The use of insufficient insulation
- (D) Inadequate understanding of physics

16. The word "rudimentary" in line 12 is closest in meaning to

- (A) growing
- (B) undeveloped
- (C) necessary
- (D) uninteresting

17. According to the information in the second paragraph, an ideal icebox would

- (A) completely prevent ice from melting
- (B) stop air from circulating
- (C) allow ice to melt slowly
- (D) use blankets to conserve ice

18 The author describes Thomas Moore as having been "on the right track" (line 18-19) to indicate that

- (A) the road to the market passed close to Moore's farm
- (B) Moore was an honest merchant
- (C) Moore was a prosperous farmer
- (D) Moore's design was fairly successful

19. According to the passage, Moore's icebox allowed him to
- (A) charge more for his butter
  - (B) travel to market at night
  - (C) manufacture butter more quickly
  - (D) produce ice all year round
20. The "produce" mentioned in line 25 could include
- (A) iceboxes
  - (B) butter
  - (C) ice
  - (D) markets

**Question 21-30**

Aside from perpetuating itself, the sole purpose of the American Academy and Institute of Arts and Letters is to "foster, assist and sustain an interest" in literature, music, and art. This it does by enthusiastically handing out money. Annual cash awards are given to deserving artists in various categories of creativity: architecture, musical composition, theater, novels, serious poetry, light verse, painting, sculpture. One award subsidizes a promising American writer's visit to Rome. There is even an award for a very good work of fiction that fallen commercially--once won by the young John Updike for *The poorhouse Fair* and, more recently, by Alice Walker for *In Love and Trouble*.

The awards and prizes total about \$750,000 a year, but most of them range in size from \$5,000 to \$12,500, a welcome sum to many young practitioners whose work may not bring in that much in a year. One of the advantages of the awards is that many go to the struggling artists, rather than to those who are already successful. Members of the Academy and Institute are not eligible for any cash prizes. Another advantage is that, unlike the National Endowment for the Arts or similar institutions throughout the world, there is no government money involved.

Awards are made by committee. Each of the three departments--Literature (120 members), Art(83), Music(47)--has a committee dealing with its own field. Committee membership rotates every year, so that new voices and opinions are constantly heard.

The most financially rewarding of all the Academy-Institute awards are the Mildred and Harold Strauss Livings. Harold Strauss, a devoted editor at Alfred A. Knopf, the New York publishing house, and Mildred Strauss, his wife, were wealthy any childless. They left the Academy-Institute a unique bequest: for five consecutive years, two distinguished (and financially needy) writers would receive enough money so they could devote themselves entirely to "prose literature" (no plays, no poetry, and no paying job that might distract). In 1983, the first Strauss Livings of \$35,000 a year went to short-story writer Raymond Carver and novelist-essayist Cynthia Ozick. By 1988, the fund had grown enough so that two winners, novelists Diane Johnson and Robert Stone, each got \$50,000 a year for five years.

21. What does the passage mainly discuss?



- (A) Award-winning works of literature
  - (B) An organization that supports the arts
  - (C) The life of an artist
  - (D) Individual patrons of the arts
22. The word "sole" in line 1 is closest in meaning to
- (A) only
  - (B) honorable
  - (C) common
  - (D) official
23. The word "subsidizes" in line 6 is closest in meaning to
- (A) assures
  - (B) finances
  - (C) schedules
  - (D) publishes
24. Which of the following can be inferred about Alice Walker's book in *Love and Trouble*?
- (A) It sold more copies than *The Poorhouse Fair*.
  - (B) It described the author's visit to Rome.
  - (C) It was a commercial success.
  - (D) It was published after *The Poorhouse Fair*.
25. Each year the awards and prizes offered by the Academy-Institute total approximately
- (A) \$12,500
  - (B) \$53,000
  - (C) \$50,000
  - (D) \$750,000
26. The word "many" in line 13 refers to
- (A) practitioners
  - (B) advantages
  - (C) awards
  - (D) strugglers
27. What is one of the advantages of the Academy-Institute awards mentioned in passage?
- (A) They are subsidized by the government.
  - (B) They are often given to unknown artists.
  - (C) They are also given to Academy-Institute members.
  - (D) They influence how the National Endowment for the Arts makes its award decisions.
28. The word "rotates" in line 19 is closest in meaning to
- (A) alternates
  - (B) participates
  - (C) decides
  - (D) meets
29. The word "they" in line 25 refers to
- (A) Mildred and Harold Strauss
  - (B) years
  - (C) writers
  - (D) plays

30. Where in the passage does the author cite the goal of the Academy-Institute?

- (A) Lines 1-3
- (B) Lines 12-13
- (C) Line 19-20
- (D) Line 22-23

**Questions 31-41**

Archaeological records—paintings, drawings and carvings of humans engaged in activities involving the use of hands—indicate that humans have been predominantly right-handed for more than 5,000 years. In ancient Egyptian artwork, for example, the right hand is depicted as the dominant one in about 90 percent of the examples. Fracture or wear patterns on tools also indicate that a majority of ancient people were right-handed.

Cro-Magnon cave paintings some 27,000 years old commonly show outlines of human hands made by placing one hand against the cave wall and applying paint with the other. Children today make similar outlines of their hands with crayons on paper. With few exceptions, left hands of Cro-Magnons are displayed on cave walls, indicating that the paintings were usually done by right-handers.

Anthropological evidence pushes the record of handedness in early human ancestors back to at least 1.4 million years ago. One important line of evidence comes from flaking patterns of stone cores used in tool making: implements flaked with a clockwise motion (indicating a right-handed toolmaker) can be distinguished from those flaked with a counter-clockwise rotation (indicating a left-handed toolmaker).

Even scratches found on fossil human teeth offer clues. Ancient humans are thought to have cut meat into strips by holding it between their teeth and slicing it with stone knives, as do the present-day Inuit. Occasionally the knives slip and leave scratches on the users' teeth. Scratches made with a left-to-right stroke direction (by right-handers) are more common than scratches in the opposite direction (made by left-handers).

Still other evidence comes from cranial morphology: scientists think that physical differences between the right and left sides of the interior of the skull indicate subtle physical differences between the two sides of the brain. The variation between the hemispheres corresponds to which side of the body is used to perform specific activities. Such studies, as well as studies of tool use, indicate that right- or left-sided dominance is not exclusive to modern Homo sapiens. Population of Neanderthals, such as Homo erectus and Homo habilis, seem to have been predominantly right-handed, as we are.

31. What is the main idea of the passage?

- (A) Human ancestors became predominantly right-handed when they began to use tools.
- (B) It is difficult to interpret the significance of anthropological evidence concerning tool use.
- (C) Humans and their ancestors have been predominantly right-handed for over a million years.
- (D) Human ancestors were more skilled at using both hands than modern humans.

32. The word "other" in line 8 refers to

- (A) outline
- (B) hand

(C) wall

(D) paint

33. What does the author say about Cro-Magnon paintings of hands?

(A) Some are not very old.

(B) It is unusual to see such paintings.

(C) Many were made by children.

(D) The artists were mostly right-handed.

34. The word "implements" in line 13 is closest in meaning to

(A) tools

(B) designs

(C) examples

(D) pieces

35. When compared with implements "flaked with a counter-clockwise rotation" (line 15), it can be inferred that "implements flaked with a clock-wise motion" (line 13-14) are

(A) more common

(B) larger

(C) more sophisticated

(D) older

36. The word "clues" in line 16 is closest in meaning to

(A) solutions

(B) details

(C) damage

(D) information

37. The fact that the Inuit cut meat by holding it between their teeth is significant because

(A) the relationship between handedness and scratches on fossil human teeth can be verified

(B) it emphasizes the differences between contemporary humans and their ancestors

(C) the scratch patterns produced by stone knives vary significantly from patterns produced by modern knives

(D) it demonstrates that ancient humans were not skilled at using tools

38. The word "hemispheres" in line 24 is closest in meaning to

(A) differences

(B) sides

(C) activities

(D) studies

39. Why does the author mention Homo erectus and Homo habilis in line 27?

(A) To contrast them with modern humans

(B) To explain when human ancestors began to make tools

(C) To show that early humans were also predominantly right handed

(D) To prove that the population of Neanderthals was very large

40. All of the follows are mentioned as types of evidence concerning handedness EXCEPT

(A) ancient artwork

(B) asymmetrical skulls

(C) studies of tool use

(D) fossilized hand bones

41 Which of the following conclusions is suggested by the evidence from cranial morphology (line 21)?

- (A) Differences in the hemispheres of the brain probably came about relatively recently.
- (B) there may be a link between handedness and differences in the brain's hemispheres
- (C) Left-handedness was somewhat more common among Neanderthals
- (D) variation between the brain hemispheres was not evident in the skill of *Homo erectus* and *Homo habilis*

**Questions 42-50**

Plants are subject to attack and infection by a remarkable variety of symbiotic species and have evolved a diverse array of mechanisms designed to frustrate the potential colonists. These can be divided into preformed or passive defense mechanisms and inducible or active systems. Passive plant defense comprises physical and chemical barriers that prevent entry of pathogens, such as bacteria, or render tissues unpalatable or toxic to the invader. The external surfaces of plants, in addition to being covered by an epidermis and a waxy cuticle, often carry spiky hairs known as trichomes, which either prevent feeding by insects or may even puncture and kill insect larvae. Other trichomes are sticky and glandular and effectively trap and immobilize insects.

If the physical barriers of the plant are breached, then preformed chemicals may inhibit or kill the intruder, and plant tissues contain a diverse array of toxic or potentially toxic substances, such as resins, tannins, glycosides, and alkaloids, many of which are highly effective deterrents to insects that feed on plants. The success of the Colorado beetle in infesting potatoes, for example, seems to be correlated with its high tolerance to alkaloids that normally repel potential pests. Other possible chemical defenses, while not directly toxic to the parasite, may inhibit some essential step in the establishment of a parasitic relationship. For example, glycoproteins in plant cell walls may inactivate enzymes that degrade cell walls. These enzymes are often produced by bacteria and fungi.

Active plant defense mechanisms are comparable to the immune system of vertebrate animals, although the cellular and molecular bases are fundamentally different. Both, however, are triggered in reaction to intrusion, implying that the host has some means of recognizing the presence of a foreign organism. The most dramatic example of an inducible plant defense reaction is the hypersensitive response. In the hypersensitive response, cells undergo rapid necrosis--that is, they become diseased and die--after being penetrated by a parasite; the parasite itself subsequently ceases to grow and is therefore restricted to one or a few cells around the entry site. Several theories have been put forward to explain the basis of hypersensitive resistance.

42. what does the passage mainly discuss?

- (A) The success of parasites in resisting plant defense mechanisms
- (B) Theories on active plant defense mechanisms
- (C) How plant defense mechanisms function
- (D) How the immune system of animals and the defense mechanisms of plants differ

43. the phrase "subject to" in line 1 is closest in meaning to

- (A) susceptible to
  - (B) classified by
  - (C) attractive to
  - (D) strengthened by
44. The word "puncture" in line 8 is closest in meaning to
- (A) pierce
  - (B) pinch
  - (C) surround
  - (D) cover
45. The word "which" in line 13 refers to
- (A) tissues
  - (B) substances
  - (C) barriers
  - (D) insects
46. Which of the following substances does the author mention as NOT necessarily being toxic to the Colorado beetle?
- (A) Resins
  - (B) Tannins
  - (C) Glycosides
  - (D) Alkaloids
47. Why does the author mention "glycoproteins" in line 17?
- (A) To compare plant defense mechanisms to the immune system of animals
  - (B) To introduce the discussion of active defense mechanisms in plants
  - (C) To illustrate how chemicals function in plant defense
  - (D) To emphasize the importance of physical barriers in plant defense
48. The word "dramatic" in line 23 could best be replaced by
- (A) striking
  - (B) accurate
  - (C) consistent
  - (D) appealing
49. Where in the passage does the author describe an active plant defense reaction ?
- (A) lines 1-3
  - (B) lines 4-6
  - (C) lines 15-17
  - (D) lines 24-27
50. The passage most probably continues with a discussion of theories on
- (A) the basis of passive plant defense
  - (B) how chemicals inhibit a parasitic relationship
  - (C) how plants produce toxic chemicals
  - (D) the principles of the hypersensitive response

**1996-01**

**Questions 1-7**

Joyce Carol Oates published her first collection of short stories, *By The North Gate*, in 1963, two years after she had received her master's degree from the University of Wisconsin and become an instructor of English at the University of Detroit. Her productivity since then has been prodigious, accumulating in less than two decades to nearly thirty titles, including novels, collections of short stories and verse, play, and literary criticism. In the meantime, she has continued to teach, moving in 1967 from the University of Detroit to the University of Windsor, in Ontario, and, in 1978, to Princeton University. Reviewers have admired her enormous energy, but find a productivity of such magnitude difficult to assess.

In a period characterized by the abandonment of so much of the realistic tradition by authors such as John Barth, Donald Barthelme, and Thomas Pynchon, Joyce Carol Oates has seemed at times determinedly old-fashioned in her insistence on the essentially mimetic quality of her fiction. Hers is a world of violence, insanity, fractured love, and hopeless loneliness. Although some of it appears to come from her own direct observations, her dreams, and her fears, much more is clearly from the experiences of others. Her first novel, *With Shuddering Fall* (1964), dealt with stock car racing, though she had never seen a race. In *Them* (1969) she focused on Detroit from the Depression through the riots of 1967, drawing much of her material from the deep impression made on her by the problems of one of her students. Whatever the source and however shocking the events or the motivations, however, her fictive world remains strikingly akin to that real one reflected in the daily newspapers, the television news and talk shows, and popular magazines of our day.

1. What is the main purpose of the passage?
  - (A) To review Oates' *By the North Gate*
  - (B) To compare some modern writers
  - (C) To describe Oates' childhood
  - (D) To outline Oates' career
2. Which of the following does the passage indicate about Joyce Carol Oates' first publication?
  - (A) It was part of her master's thesis.
  - (B) It was a volume of short fiction.
  - (C) It was not successful.
  - (D) It was about an English instructor in Detroit.
3. Which of the following does the passage suggest about Joyce Carol Oates in terms of her writing career?
  - (A) She has experienced long nonproductive periods in her writing.
  - (B) Her style is imitative of other contemporary authors.
  - (C) She has produced a surprising amount of fictions in a relative short time.
  - (D) Most of her work is based on personal experience.
4. The word "characterized" in line 10 can best be replaced by which of the following?
  - (A) shocked
  - (B) impressed
  - (C) distinguished
  - (D) helped

5. What was the subject of Joyce Carol Oates' first novel?
- (A) Loneliness
  - (B) Insanity
  - (C) Teaching
  - (D) Racing
6. Why does the author mention Oates book *In Them*?
- (A) It is a typical novel of the 1960's.
  - (B) It is her best piece of nonfiction.
  - (C) It is a fictional work based on the experiences of another person.
  - (D) It is an autobiography.
7. Which of the following would Joyce Carol Oates be most likely to write?
- (A) A story with an unhappy ending
  - (B) A romance novel set in the nineteenth century
  - (C) A science fiction novel
  - (D) A dialogue for a talk show

### **Questions 8-18**

Certainly no creature in the sea is odder than the common sea cucumber. All living creature, especially human beings, have their peculiarities, but everything about the little sea cucumber seems unusual. What else can be said about a bizarre animal that, among other eccentricities, eats mud, feeds almost continuously day and night but can live without eating for long periods, and can be poisonous but is considered supremely edible by gourmets?

For some fifty million years, despite all its eccentricities, the sea cucumber has subsisted on its diet of mud. It is adaptable enough to live attached to rocks by its tube feet, under rocks in shallow water, or on the surface of mud flats. Common in cool water on both Atlantic and Pacific shores, it has the ability to such up mud or sand and digest whatever nutrients are present.

Sea cucumbers come in a variety of colors, ranging from black to reddish-brown to sand-color and nearly white. One form even has vivid purple tentacle. Usually the creatures are cucumber-shaped-hence their name-and because they are typically rock inhabitants, this shape, combine with flexibility, enables them to squeeze into crevices where they are safe from predators and ocean currents.

Although they have voracious appetites, eating day and night, sea cucumbers have the capacity to become quiescent and live at a low metabolic rate-feeding sparingly or not at all for long periods, so that the marine organisms that provide their food have a chance to multiply. If it were not for this faculty, they would devour all the food available in a short time and would probably starve themselves out of existence.

But the most spectacular thing about the sea cucumber is the way it defends itself. Its major enemies are fish and crabs, when attacked, it squirts all its internal organs into the water. It also casts off attached structures such as tentacles. The sea cucumber will eviscerate and regenerate itself if it is attached or even touched; it will do the same if the surrounding water temperature is too high or if the water becomes too polluted.

8. What does the passage mainly discuss?
- (A) The reason for the sea cucumber's name
  - (B) What makes the sea cucumber unusual
  - (C) How to identify the sea cucumber
  - (D) Places where the sea cucumber can be found
9. In line 3, the word "bizarre" is closest in meaning to
- (A) odd
  - (B) marine
  - (C) simple
  - (D) rare
10. According to the Passage, why is the shape of sea cucumbers important?
- (A) It helps the to digest their food.
  - (B) It helps them to protect themselves from danger.
  - (C) It makes it easier for them to move through the mud.
  - (D) It makes them attractive to fish.
11. The word "this faculty" in line 20 refer to the sea cucumber's ability to
- (A) squeeze into crevices
  - (B) devour all available food in a short time
  - (C) such up mud or sand
  - (D) live at a low metabolic rate
12. The fourth paragraph of the passage primarily discuss
- (A) the reproduction of sea cucumbers
  - (B) the food sources of sea cucumbers
  - (C) the eating habits of sea cucumbers
  - (D) threats to sea cucumbers' existence
13. The phrase "casts off" in line 24 is closest in meaning to
- (A) grows again
  - (B) grabs
  - (C) gets rid of
  - (D) uses as a weapon
14. Of all the characteristics of the sea cucumber, which of the following seems to fascinate the author most?
- (A) What it does when threatened
  - (B) Where it lives
  - (C) How it hides from predators
  - (D) What it eats
15. Compared with other sea creatures the sea cucumber is very
- (A) dangerous
  - (B) intelligent
  - (C) strange
  - (D) fat
16. What can be inferred about the defense mechanisms of the sea cucumber?
- (A) They are very sensitive to surrounding stimuli.
  - (B) They are almost useless.



- (C) They require group cooperation.  
(D) They are similar to those of most sea creatures.
17. Which of the following would NOT cause a sea cucumber to release its internal organs into the water?
- (A) A touch  
(B) Food  
(C) Unusually warm water  
(D) Pollution
18. Which of the following is an example of behavior comparable with the sea cucumber living at a low metabolic rate?
- (A) An octopus defending itself with its tentacles  
(B) A bear hibernating in the wintering  
(C) A pig eating constantly  
(D) A parasite living on its host's blood

### **Questions 19-29**

A fold culture is small, isolated, cohesive, conservative, nearly self-sufficient group that is homogeneous in custom and race, with a strong family or clan structure and highly developed rituals. Order is maintained through sanctions based in the religion or family, and interpersonal relationships are strong. Tradition is paramount, and change comes infrequently and slowly. There is relatively little division of labor into specialized duties. Rather, each person is expected to perform a great variety of tasks, though duties may differ between the sexes. Most goods are handmade, and a subsistence economy prevails. Individualism is weakly developed in folk cultures, as are social classes. Unaltered folk cultures no longer exist in industrialized countries such as the United States and Canada. Perhaps the nearest modern equivalent in Anglo-America is the Amish, a German American farming sect that largely renounces the products and labor saving devices of the industrial age. In Amish areas, horse-drawn buggies still serve as a local transportation device, and the faithful are not permitted to own automobiles. The Amish's central religious concept of Demut, "humility", clearly reflects the weakness of individualism and social class so typical of folk cultures, and there is a corresponding strength of Amish group identity. Rarely do the Amish marry outside their sect. The religion, a variety of the Mennonite faith, provides the principal mechanism for maintaining order.

By contrast, a popular culture is a large heterogeneous group, often highly individualistic and constantly changing. Relationships tend to be impersonal, and a pronounced division of labor exists, leading to the establishment of many specialized professions. Secular institutions, of control such as the police and army take the place of religion and family in maintaining order, and a money-based economy prevails. Because of these contrasts, "popular" may be viewed as clearly different from "folk". The popular is replacing the folk in industrialized countries and in many developing nations, Folk-made objects give way to their popular equivalent, usually because the popular item is more quickly or cheaply produced, is easier or time saving to use, or lends more prestige to the owner.

19. What does the passage mainly discuss?
- (A) Two decades in modern society
  - (B) The influence of industrial technology
  - (C) The characteristics of "folk" and "popular" societies
  - (D) The specialization of labor in Canada and the United States
20. The word "homogeneous" in line 2 is closest in meaning to
- (A) uniform
  - (B) general
  - (C) primitive
  - (D) traditional
21. Which of the following is typical of folk cultures?
- (A) There is a money-based economy.
  - (B) Social change occurs slowly.
  - (C) Contact with other cultures is encouraged.
  - (D) Each person develops one specialized skill.
22. What does the author imply about the United States and Canada?
- (A) They value folk cultures.
  - (B) They have no social classes.
  - (C) They have popular cultures.
  - (D) They do not value individualism.
23. The phrase "largely renounces" in line 11 is closest in meaning to
- (A) generally rejects
  - (B) greatly modifies
  - (C) loudly declares
  - (D) often criticizes
24. What is the main source of order in Amish society?
- (A) The government
  - (B) The economy
  - (C) The clan structure
  - (D) The religion
25. Which of the following statements about Amish beliefs does the passages support?
- (A) A variety of religious practices is tolerated.
  - (B) Individualism and competition are important.
  - (C) Premodern technology is preferred.
  - (D) People are defined according to their class.
26. Which of the following would probably NOT be found in a folk culture?
- (A) A carpenter
  - (B) A farmer
  - (C) A weaver
  - (D) A banker
27. The word "prevails" in line 23 is closest in meaning to
- (A) dominates
  - (B) provides

(C) develops

(D) invests

28. The word "their" in line 26 refers to

(A) folk

(B) nations

(C) countries

(D) objects

29. Which of following is NOT given as a reason why folk-made objects are replaced by mass-produced objects?

(A) Cost

(B) Prestige

(C) Quality

(D) Convenience

### **Questions 30-40**

Many of the most damaging and life-threatening types of weather-torrential rains, severe thunderstorms, and tornadoes-begin quickly, strike suddenly, and dissipate rapidly, devastating small regions while leaving neighboring areas untouched. One such event, a tornado, struck the northeastern section of Edmonton, Alberta, in July 1987. Total damages from the tornado exceeded \$ 250 million, the highest ever for any Canadian storm. Conventional computer models of the atmosphere have limited value in predicting short-live local storms like the Edmonton tornado, because the available weather data are generally not detailed enough to allow computers to discern the subtle atmospheric changes that precede these storms. In most nations, for example, weather-balloon observations are taken just once every twelve hours at locations typically separated by hundreds of miles. With such limited data, conventional forecasting models do a much better job predicting general weather conditions over large regions than they do forecasting specific local events.

Until recently, the observation-intensive approach needed for accurate, very short-range forecasts, or "Nowcasts", was not feasible. The cost of equipping and operating many thousands of conventional weather stations was prohibitively high, and the difficulties involved in rapidly collecting and processing the raw weather data from such a network were insurmountable. Fortunately, scientific and technological advances have overcome most of these problems. Radar systems, automated weather instruments, and satellites are all capable of making detailed, nearly continuous observation over large regions at a relatively low cost. Communications satellites can transmit data around the world cheaply and instantaneously, and modern computers can quickly compile and analyzing this large volume of weather information. Meteorologists and computer scientists now work together to design computer programs and video equipment capable of transforming raw weather data into words, symbols, and vivid graphic displays that forecasters can interpret easily and quickly. As meteorologists have begun using these new technologies in weather forecasting offices, Nowcasting is becoming a reality.

30. What does the passage mainly discuss?
- (A) Computers and weather
  - (B) Dangerous storms
  - (C) Weather forecasting
  - (D) Satellites
31. Why does the author mention the tornado in Edmonton, Canada?
- (A) To indicate that tornadoes are common in the summer
  - (B) To give an example of a damaging storm
  - (C) To explain different types of weather
  - (D) To show that tornadoes occur frequently in Canada
32. The word "subtle" in line 8 is closest in meaning to
- (A) complex
  - (B) regular
  - (C) imagined
  - (D) slight
33. Why does the author state in line 10 that observations are taken "just once every twelve hours"?
- (A) To indicate that the observations are timely
  - (B) To show why the observations are of limited value
  - (C) To compare data from balloons and computers
  - (D) To give an example of international cooperation
34. The word "they" in line 13 refers to
- (A) models
  - (B) conditions
  - (C) regions
  - (D) events
35. Which of the following is NOT mentioned as an advance in short-range weather forecasting?
- (A) Weather balloons
  - (B) Radar systems
  - (C) Automated instruments
  - (D) Satellites
36. The word "compile" in line 23 is closest in meaning to
- (A) put together
  - (B) look up
  - (C) pile high
  - (D) work over
37. With Nowcasting, it first became possible to provide information about
- (A) short-lived local storms
  - (B) radar networks
  - (C) long-range weather forecasts
  - (D) general weather conditions
38. The word "raw" in line 25 is closest in meaning to
- (A) stormy
  - (B) inaccurate
  - (C) uncooked

(D) unprocessed

39. With which of the following statements is the author most likely to agree?

(A) Communications satellites can predict severe weather.

(B) Meteorologists should standardize computer programs.

(C) The observation-intensive approach is no longer useful.

(D) Weather predictions are becoming more accurate.

40. Which of the following would best illustrate Nowcasting?

(A) A five-day forecast

(B) A warning about a severe thunderstorm on the radio.

(C) The average rainfall for each month

(D) A list of temperatures in major cities

### **Questions 41-50**

People in the United States in the nineteenth-century were haunted by the prospect that unprecedented change in the nation's economy would bring social chaos. In the years following 1820, after several decades of relative stability, the economy entered a period of sustained and extremely rapid growth that continued to the end of the nineteenth century. Accompanying that growth was a structural change that featured increasing economic diversification and a gradual shift in the nation's labor force from agriculture to manufacturing and other nonagricultural pursuits.

Although the birth rate continued to decline from its high level of the eighteenth and early nineteenth century, the population roughly doubled every generation during the rest of the nineteenth centuries. As the population grew, its makeup also changed. Massive waves of immigration brought new ethnic groups into the country. Geographic and social mobility-downward as well as upward-touched almost everyone. Local studies indicate that nearly three-quarters of the population-in the north and South, in the emerging cities of the northeast, and in the restless rural countries of the West-changed their residence each decade. As a consequence, historian David Donald has written, "Social atomization affected every segment of society", and it seemed to many people that "all the recognized values of orderly civilization were gradually being eroded".

Rapid industrialization and increased geographic mobility in the nineteenth century had special implications for women because these changes tended to magnify social distinctions. As the roles men and women played in society became more rigidly defined, so did the roles they played in the home. In the context of extreme competitiveness and dizzying social change, the household lost many of its earlier functions and the home came to serve as a haven of tranquility and order. As the size of families decreased, the roles of husband and wife became more clearly differentiated than ever before. In the middle class especially, men participated in the productive economy while women ruled the home and served as the custodians, of civility and culture. The intimacy of marriage that was common in earlier periods was rent, and a gulf that at times seemed unbridgeable was created between husbands and wives.

41. What does the passage mainly discuss?

- (A) The economic development of the United States in the eighteenth century
  - (B) Ways in which economic development led to social changes in the United States
  - (C) Population growth in the western United States
  - (D) The increasing availability of industrial jobs for women in the United States
42. The word "Prospect" in line 1 is closest in meaning to
- (A) regret
  - (B) possibility
  - (C) theory
  - (D) circumstance
43. According to the passage, the economy of the United States between 1820 and 1900 was
- (A) expanding
  - (B) in sharp decline
  - (C) stagnate
  - (D) disorganized
44. The word "roughly" in line 9 is closest in meaning to
- (A) harshly
  - (B) surprisingly
  - (C) slowly
  - (D) approximately
45. The word "its" in line 10 refers to
- (A) century
  - (B) population
  - (C) generation
  - (D) birth rate
46. According to the passage, as the nineteenth century progressed, the people of the United States
- (A) emigrated to other countries
  - (B) often settled in the West
  - (C) tended to change the place in which they lived
  - (D) had a higher rate of birth than ever before
47. Which of the following best describes the society about which David Donald wrote?
- (A) A highly conservative society that was resistant to new ideas
  - (B) A society that was undergoing fundamental change
  - (C) A society that had been gradually changing since the early 1700's
  - (D) A nomadic society that was starting permanent settlements
48. The word "magnify" in line 20 is closest in meaning to
- (A) solve
  - (B) explain
  - (C) analyze
  - (D) increase
49. Which of the following is NOT mentioned as an example of the social changes occurring in the United States after 1820?
- (A) Increased social mobility
  - (B) Increased immigration

- (C) Significant movement of population
  - (D) Strong emphasis on traditional social values
50. The word "distinctions" in line 21 is closest in meaning to
- (A) differences
  - (B) classes
  - (C) accomplishments
  - (D) characteristics

## 1996-05

### Question 1-12

Orchids are unique in having the most highly developed of all blossoms, in which the usual male and female reproductive organs are fused in a single structure called the column. The column is designed so that a single pollination will fertilize hundreds of thousands, and in some cases millions, of seeds, so microscopic and light they are easily carried by the breeze. Surrounding the column are three sepals and three petals, sometimes easily recognizable as such, often distorted into gorgeous, weird, but always functional shapes. The most noticeable of the petals is called the labellum, or lip. It is often dramatically marked as an unmistakable landing strip to attract the specific insect the orchid has chosen as its pollinator.

To lure their pollinators from afar, orchids use appropriately intriguing shapes, colors, and scents. At least 50 different aromatic compounds have been analyzed in the orchid family, each blended to attract one, or at most a few, species of insects or birds. Some orchids even change their scents to interest different insects at different times.

Once the right insect has been attracted, some orchids present all sorts of one-way obstacle courses to make sure it does not leave until pollen has been accurately placed or removed. By such ingenious adaptations to specific pollinators, orchids have avoided the hazards of rampant crossbreeding in the wild, assuring the survival of species as discrete identities. At the same time they have made themselves irresistible to collectors.

1. What does the passage mainly discuss?
- (A) Birds
  - (B) Insects
  - (C) Flowers
  - (D) Perfume
- 2 The orchid is unique because of
- (A) the habitat in which it lives
  - (B) the structure of its blossom
  - (C) the variety of products that can be made from it
  - (D) the length of its life
- 3 The word "fused" in line 2 is closest in meaning to
- (A) combined
  - (B) hidden

(C) fertilized

(D) produced

4 How many orchid seeds are typically pollinated at one time?

(A) 200

(B) 2,000

(C) 20,000

(D) 200,000

5 Which of the following is a kind of petal?

(A) The column

(B) The sepal

(C) The stem

(D) The labellum

6 The labellum(line7) is most comparable to

(A) a microscope

(B) an obstacle course

(C) an airport runway

(D) a racetrack

7 The word "lure" in line 10 is closest in meaning to

(A) attract

(B) recognize

(C) follow

(D) help

8 Which of the following is NOT mentioned as a means by which an orchid attracts insects?

(A) Size

(B) Shape

(C) Color

(D) Perfume

9 The word "their" in line 13 refers to

(A) orchids

(B) birds

(C) insects

(D) species

10 Which of the following statements about orchids scents does the passage support?

(A) They are effective only when an insect is near the blossom.

(B) Harmful insects are repelled by them.

(C) They are difficult to tell apart.

(D) They may change at different times.

11 The word "placed" in line 15 is closest in meaning to

(A) estimated

(B) measured

(C) deposited

(D) identified

12 The word "discrete" in line 18 is closest in meaning to

(A) complicated



- (B) separate
- (C) inoffensive
- (D) functional

**Question 13-22**

One of the most important social developments that helped to make possible a shift in thinking about the role of public education was the effect of the baby boom of the 1950's and 1960's on the schools. In the 1920's, but especially in the Depression conditions of the 1930's, the United States experienced a declining birth rate -every thousand women aged fifteen to forty-four gave birth to about 118 live children in 1920, 89.2 in 1930, 75.8 in 1936, and 80 in 1940. With the growing prosperity brought on by the Second World War and the economic boom that followed it, young people married and established households earlier and began to raise larger families than had their predecessors during the Depression. Birth rates rose to 102 per thousand in 1946, 106.2 in 1950, and 118 in 1955. Although economics was probably the most important determinant, it is not the only explanation for the baby boom. The increased value placed on the idea of the family also helps to explain this rise in birth rates. The baby boomers began streaming into the first grade by the mid-1940's and became a flood by 1950. The public school system suddenly found itself overtaxed. While the number of schoolchildren rose because of wartime and postwar conditions, these same conditions made the schools even less prepared to cope with the flood. The wartime economy meant that few new schools were built between 1940 and 1945. Moreover, during the war and in the boom times that followed, large numbers of teachers left their profession for better-paying jobs elsewhere in the economy.

Therefore, in the 1950's and 1960's, the baby boom hit an antiquated and inadequate school system. Consequently, the "custodial rhetoric" of the 1930's and early 1940's no longer made sense; that is, keeping youths aged sixteen and older out of the labor market by keeping them in school could no longer be a high priority for an institution unable to find space and staff to teach younger children aged five to sixteen. With the baby boom, the focus of educators and of laymen interested in education inevitably turned toward the lower grades and back to basic academic skills and discipline. The system no longer had much interest in offering nontraditional, new, and extra services to older youths.

13 What does the passage mainly discuss?

- (A) The teaching profession during the baby boom
- (B) Birth rates in the United States in the 1930's and 1940
- (C) The impact of the baby boom on public education
- (D) The role of the family in the 1950's and 1960's

14 The word "it" in line 11 refers to

- (A) 19550
- (B) economics
- (C) the baby boom
- (D) value

- 15 The word "overtaxed" in line 14 is closest in meaning to
- (A) well prepared
  - (B) plentifully supplied
  - (C) heavily burdened
  - (D) charged too much
- 16 The public school of the 1950's and 1960's faced all of the following problems EXCEPT
- (A) a declining number of students
  - (B) old-fashioned facilities
  - (C) a shortage of teachers
  - (D) an inadequate number of school buildings
- 17 According to the passage, why did teachers leave the teaching profession after the outbreak of the war?
- (A) They needed to be retrained
  - (B) They were dissatisfied with the curriculum.
  - (C) Other jobs provided higher salaries.
  - (D) Teaching positions were scarce.
- 18 The word "inadequate" in line 20 is closest in meaning to
- (A) deficient
  - (B) expanded
  - (C) innovative
  - (D) specialized
- 19 The "custodial rhetoric" mentioned in line 21 refers to
- (A) raising a family
  - (B) keeping older individuals in school
  - (C) running an orderly house hold
  - (D) maintaining discipline in the classroom
- 20 The word "inevitably" in line 25 is closest in meaning to
- (A) unwillingly
  - (B) impartially
  - (C) irrationally
  - (D) unavoidably
- 21 Where in the passage does the author refer to the attitude of Americans toward raising a family in the 1950's and 1960's?
- (A) Lines 1-3
  - (B) Lines 11-12
  - (C) Lines 20-21
  - (D) Lines 24-26
- 22 Which of the following best characterizes the organization of the passage?
- (A) The second paragraph presents the effect of circumstances described in the first paragraph.
  - (B) The second paragraph provides a fictional account to illustrate a problem presented in the first paragraph.
  - (C) The second paragraph argues against a point made in the first paragraph.
  - (D) The second paragraph introduces a problem not mentioned in the first paragraph.

### Questions 23-32

Nineteenth-century writers in the United States, whether they wrote novels, short stories, poems, or plays, were powerfully drawn to the railroad in its golden year. In fact, writers responded to the railroads as soon as the first were built in the 1830's. By the 1850's, the railroad was a major presence in the life of the nation. Writers such as Ralph Waldo Emerson and Henry David Thoreau saw the railroad both as a boon to democracy and as an object of suspicion. The railroad could be and was a despoiler of nature; furthermore, in its manifestation of speed and noise, it might be a despoiler of human nature as well. By the 1850's and 1860's, there was a great distrust among writer and intellectuals of the rapid industrialization of which the railroad was a leading force. Deeply philosophical historians such as Henry Adams lamented the role that the new frenzy for business was playing in eroding traditional values. A distrust of industry and business continued among writers throughout the rest of the nineteenth century and into the twentieth.

For the most part, the literature in which the railroad plays an important role belong to popular culture rather than to the realm of serious art. One thinks of melodramas, boys' books, thrillers, romances, and the like rather than novels of the first rank. In the railroads' prime years, between 1890 and 1920, there were a few individuals in the United States, most of them with solid railroading experience behind them, who made a profession of writing about railroading-works offering the ambience of stations, yards, and locomotive cabs. These writers, who can genuinely be said to have created a genre, the "railroad novel." are now mostly forgotten, their names having faded from memory. But anyone who takes the time to consult their fertile writings will still find a treasure trove of information about the place of the railroad in the lift of the United States.

23 With which of the following topics is the passage mainly concerned?

- (A) The role of the railroad in the economy of the United States.
- (B) Major nineteenth-century writers.
- (C) The conflict between expanding industry and preserving nature.
- (D) The railroad as a subject for literature.

24 The word "it" in line 7 refers to

- (A) railroad
- (B) manifestation
- (C) speed
- (D) nature

25 In the first paragraph, the author implies that writers' reactions to the development of railroads were

- (A) highly enthusiastic
- (B) both positive and negative
- (C) unchanging
- (D) disinterested

26 The word "lamented" in line 10 is closest in meaning to

- (A) complained about

(B) analyzed

(C) explained

(D) reflected on

27 According to the passage, the railroad played a significant role in literature in all of the following kinds of books EXCEPT

(A) thrillers

(B) boys' books

(C) important novels

(D) romances

28 The phrase "first rank" in line 16 is closest in meaning to

(A) largest category

(B) highest quality

(C) earliest writers

(D) most difficult language

29 The word "them" in line 18 refers to

(A) novels

(B) years

(C) individuals

(D) works

30 The author mentions all of the following as being true about the literature of railroads EXCEPT that

(A) many of its writers had experience working on railroads

(B) many of the books were set in railroad stations and yards

(C) the books were well known during the railroads' prime years.

(D) quite a few of the books are still popular today.

31 The words "faded from" in line 21 are closest in meaning to

(A) grew in

(B) disappeared from

(C) remained in

(D) developed from

32 What is the author's attitude toward the "railroad novels" and other books about railroads written between 1890 and 1920?

(A) They have as much literary importance as the books written by Emerson, Thoreau, and Adams.

(B) They are good examples of the effects industry and business had on the literature of the United States.

(C) They contributed to the weakening of traditional values.

(D) They are worth reading as sources of knowledge about the impact of railroads on life in the United States.

### **Questions 33-44**

By the 1820's in the United States, when steamboats were common on western waters, these boats were mostly powered by engines built in the West (Pittsburgh, Cincinnati, or Louisville), and of a distinctive western design specially suited to western needs. The first steam engines in practical use in England and the United

States were of low-pressure design. This was the type first developed by James Watt, then manufactured by the firm of Boulton and Watt, and long the standard industrial engine. Steam was accumulated in a large, double-acting vertical cylinder, but the steam reached only a few pounds of pressure per square inch. It was low-pressure engines of this type that were first introduced into the United States by Robert Fulton. He imported such a Boulton and Watt engine from England to run the Clermont. But this type of engine was expensive and complicated, requiring many precision-fitted moving parts.

The engine that became standard on western steamboats was of a different and novel design. It was the work primarily of an unsung hero of American industrial progress, Oliver Evans(1755-1819). The self-educated son of a Delaware farmer. Evans early became obsessed by the possibilities of mechanized production and steam power. As early as 1802 he was using a stationary steam engine of high-pressure design in his mill. Engines of this type were not unknown, but before Evans they were generally considered impractical and dangerous.

Within a decade the high-pressure engine, the new type, had become standard on western waters. Critics ignorant of western conditions often attacked it as wasteful and dangerous. But people who really knew the Ohio, the Missouri, and the Mississippi insisted, with good reasons, that it was the only engine for them. In shallow western rivers the weight of vessel and engine was important; a heavy engine added to the problem of navigation. The high-pressure engine was far lighter in proportion to horsepower, and with less than half as many moving parts, was much easier and cheaper to repair. The main advantages of low-pressure engines were safe operation and economy of fuel consumption, neither of which meant much in the West.

33 What is the passage mainly about?

- (A) Steamboat engines in the western United States
- (B) River travel in the western United States
- (C) A famous United States inventor
- (D) The world's first practical steamboat

34 What was the Clermont (line 10)?

- (A) A river
- (B) A factory
- (C) A boat
- (D) An engine

35 Who developed the kind of steam engine used on western steamboats?

- (A) Watt
- (B) Boulton
- (C) Fulton
- (D) Evans

36 The word "novel" in line 14 is closest in meaning to

- (A) fictional
- (B) intricate
- (C) innovative

(D) powerful

37 What opinion of Evans is suggested by the use of the term "unsung hero" in line 14?

- (A) More people should recognize the importance of his work .
- (B) More of his inventions should be used today.
- (C) He should be credited with inventing the steam engine.
- (D) More should be learned about his early life.

38 What does the author imply about Evans?

- (A) He went to England to learn about steam power.
- (B) He worked for Fulton.
- (C) He traveled extensively in the West.
- (D) He taught himself about steam engines.

39 The word "stationary" in line 17 is closest in meaning to

- (A) single
- (B) fixed
- (C) locomotive
- (D) modified

40 The word "they" in line 18 refers to

- (A) engines
- (B) mechanized production and steam power
- (C) possibilities
- (D) steamboats

41 What does the author imply about the western rivers?

- (A) It was difficult to find fuel near them.
- (B) They flooded frequently.
- (C) They were difficult to navigate.
- (D) They were rarely used for transportation.

42 The word "it" in line 23 refers to

- (A) decade
- (B) high-pressure engine
- (C) weight
- (D) problem

43 The word "vessel" in line 24 is closest in meaning to

- (A) fuel
- (B) crew
- (C) cargo
- (D) craft

44 Which of the following points was made by the critics of high-pressure engines?

- (A) They are expensive to import.
- (B) They are not powerful enough for western waters.
- (C) They are dangerous.
- (D) They weigh too much.

#### **Questions 45-50**

Volcanic fire and glacial ice are natural enemies. Eruptions at glaciated volcanoes

typically destroy ice fields, as they did in 1980 when 70 percent of Mount Saint Helens ice cover was demolished. During long dormant intervals, glaciers gain the upper hand cutting deeply into volcanic cones and eventually reducing them to rubble. Only rarely do these competing forces of heat and cold operate in perfect balance to create a phenomenon such as the steam caves at Mount Rainier National Park.

Located inside Rainier's two ice-filled summit craters, these caves form a labyrinth of tunnels and vaulted chambers about one and one-half miles in total length. Their creation depends on an unusual combination of factors that nature almost never brings together in one place. The cave-making recipe calls for a steady emission of volcanic gas and heat, a heavy annual snowfall at an elevation high enough to keep it from melting during the summer, and a bowl-shaped crater to hold the snow.

Snow accumulating yearly in Rainier's summit craters is compacted and compressed into a dense form of ice called firn, a substance midway between ordinary ice and the denser crystalline ice that makes up glaciers. Heat rising from numerous openings (called fumaroles) along the inner crater walls melts out chambers between the rocky walls and the overlying ice pack. Circulating currents of warm air then melt additional opening in the firn ice, eventually connecting the individual chambers and, in the larger of Rainier's two craters, forming a continuous passageway that extends two-thirds of the way around the crater's interior.

To maintain the cave system, the elements of fire under ice must remain in equilibrium. Enough snow must fill the crater each year to replace that melted from below. If too much volcanic heat is discharged, the crater's ice pack will melt away entirely and the caves will vanish along with the snow of yesteryear. If too little heat is produced, the ice, replenished annually by winter snowstorms, will expand, pushing against the enclosing crater walls and smothering the present caverns in solid firn ice.

45 With what topic is the passage primarily concerned?

- (A) The importance of snowfall for Mount Rainier.
- (B) The steam caves of Mount Rainier.
- (C) how ice covers are destroyed .
- (D) The eruption of Mount Saint Helens in 1980.

46 The word "they" in line 2 refers to

- (A) fields
- (B) intervals
- (C) eruptions
- (D) enemies

47 According to the passage long periods of volcanic inactivity can lead to a volcanic cone's

- (A) strongest eruption
- (B) sudden growth
- (C) destruction
- (D) unpredictability

48 The second paragraph mentions all of the following as necessary elements in the creation of steam caves EXCEPT

- (A) a glacier

- (B) a crater
- (C) heat
- (D) snow

49 According to the passage, heat from Mount Rainier's summit craters rises from

- (A) crystalline ice
- (B) firs
- (C) chambers
- (D) fumaroles

50 In line 26 "smothering" the caverns means that they would be

- (A) eliminated
- (B) enlarged
- (C) prevented
- (D) hollowed

## 1996-08

### Question 1--10

The word laser was coined as an acronym for Light Amplification by the Stimulated Emission of Radiation. Ordinary light, from the Sun or a light bulb, is emitted spontaneously, when atoms or molecules get rid of excess energy by themselves, without any outside intervention. Stimulated emission is different because it occurs when an atom or molecule holding onto excess energy has been stimulated to emit it as light.

Albert Einstein was the first to suggest the existence of stimulated emission in a paper published in 1917. However, for many years physicists thought that atoms and molecules always were much more likely to emit light spontaneously and that stimulated emission thus always would be much weaker. It was not until after the Second World War that physicists began trying to make stimulated emission dominate. They sought ways by which one atom or molecule could stimulate many other to emit light , amplifying it to much higher powers.

The first to succeed was Charles H. Townes, then at Colombia University in New York . Instead of working with light, however, he worked with microwaves, which have a much longer wavelength, and built a device he called a "maser" for Microwave Amplification by the Stimulated Emission of Radiation. Although he thought of the key idea in 1951, the first maser was not completed until a couple of years later. Before long, many other physicists were building masers and trying to discover how to produce stimulated emission at even shorter wavelength.

The key concepts emerged about 1957. Townes and Arthur Schawlow, then at Bell Telephone Laboratories, wrote a long paper outlining the conditions needed to amplify stimulated emission of visible light waves. At about the same time, similar ideas crystallized in the mind of Gordon Gould, then a 37-year-old graduate student at Columbia, who wrote them down in a series of notebooks. Townes and Schawlow published their ideas in a scientific journal, Physical Review Letter, but Gould filed a patent application. Three decades later, people still argue about who deserves the credit for the concept of the laser.



1. The word "coin" in line 1 could be replaced by
  - (A) created
  - (B) mentioned
  - (C) understood
  - (D) discovered
2. The word "intervention" in line 4 can best be replaced by
  - (A) need
  - (B) device
  - (C) influence
  - (D) source
3. The word "it" in line 5 refers to
  - (A) light bulb
  - (B) energy
  - (C) molecule
  - (D) atom
4. Which of the following statements best describes a laser?
  - (A) A device for stimulating atoms and molecules to emit light
  - (B) An atom in a high-energy state
  - (C) A technique for destroying atoms or molecules
  - (D) An instrument for measuring light waves
5. Why was Towne's early work with stimulated emission done with microwaves?
  - (A) He was not concerned with light amplification
  - (B) It was easier to work with longer wavelengths.
  - (C) His partner Schawlow had already begun work on the laser.
  - (D) The laser had already been developed
6. In his research at Columbia University, Charles Townes worked with all of the following EXCEPT
  - (A) stimulated emission
  - (B) microwaves
  - (C) light amplification
  - (D) a maser
7. In approximately what year was the first maser built?
  - (A) 1917
  - (B) 1951
  - (C) 1953
  - (D) 1957
8. The word "emerged" in line 20 is closest in meaning to
  - (A) increased
  - (B) concluded
  - (C) succeeded
  - (D) appeared
9. The word "outlining" in line 21 is closest in meaning to
  - (A) assigning
  - (B) studying

(C) checking

(D) summarizing

10. Why do people still argue about who deserves the credit for the concept of the laser?

(A) The researchers' notebooks were lost.

(B) Several people were developing the idea at the same time.

(C) No one claimed credit for the development until recently.

(D) The work is still incomplete.

**Question 11--21**

Panel painting, common in thirteenth -and fourteenth -century Europe, involved a painstaking, laborious process. Wooden planks were joined, covered with gesso to prepare the surface for painting , and then polished smooth with special tools. On this perfect surface, the artist would sketch a composition with chalk, refine it with inks, and then begin the deliberate process of applying thin layers of egg tempera paint (egg yolk in which pigments are suspended) with small brushes. The successive layering of these meticulously applied paints produced the final, translucent colors.

Backgrounds of gold were made by carefully applying sheets of gold leaf, and then embellishing of decorating the gold leaf by punching it with a metal rod on which a pattern had been embossed. Every step in the process was slow and deliberate. The quick-drying tempera demanded that the artist know exactly where each stroke be placed before the brush met the panel, and it required the use of fine brushes. It was, therefore, an ideal technique for emphasizing the hard linear edges and pure, fine areas of color that were so much a part of the overall aesthetic of the time. The notion that an artist could or would dash off an idea in a fit of spontaneous inspiration was completely alien to these deliberately produced works.

Furthermore, making these paintings was so time-consuming that it demanded assistance. All such work was done by collective enterprise in the workshops. The painter or master who is credited with having created painting may have designed the work and overseen its production, but it is highly unlikely that the artist's hand applied every stroke of the brush. More likely, numerous assistants, who had been trained to imitate the artist's style, applied the paint. The carpenter's shop probably provided the frame and perhaps supplied the panel, and yet another shop supplied the gold. Thus, not only many hands, but also many shops were involved in the final product.

In spite of problems with their condition, restoration, and preservation many panel paintings have survived, and today many of them are housed in museum collections.

11. What aspect of panel paintings does the passage mainly discuss?

(A) Famous examples

(B) Different styles

(C) Restoration

(D) Production

12. According to the passage, what does the first step in making a panel painting ?

(A) Mixing the paint

- (B) Preparing the panel
  - (C) Buying the gold leaf
  - (D) Making ink drawings
13. The word "it" in line 4 refers to .
- (A) chalk
  - (B) composition
  - (C) artist
  - (D) surface
14. The word "deliberate" in line 5 is closest in meaning to
- (A) decisive
  - (B) careful
  - (C) natural
  - (D) unusual
15. Which of the following processes produced the translucent colors found on panel paintings?
- (A) Joining wooden planks to form large sheets
  - (B) Polishing the gesso
  - (C) Applying many layers of paint
  - (D) Covering the background with gold leaf
16. What characteristic of tempera paint is mentioned in the passage ?
- (A) It dries quickly
  - (B) It is difficult to make
  - (C) It dissolves easily
  - (D) It has to be applied directly to wood
17. The word "demanded" in line 17 is closest in meaning to
- (A) ordered
  - (B) reported
  - (C) required
  - (D) questioned
18. The "collective enterprise" mentioned in line 18 includes all of the following EXCEPT
- (A) supplying the gold leaf
  - (B) building the panels
  - (C) applying the paint
  - (D) selling the painting
19. The word "imitate" in line 22 is closest in meaning to
- (A) copy
  - (B) illustrate
  - (C) promote
  - (D) believe in
20. The author mentions all of the following as problems with the survival of panel painting EXCEPT
- (A) condition
  - (B) theft
  - (C) preservation
  - (D) restoration
21. The word "them" in line 27 refers to

- (A) problems
- (B) condition, restoration, preservation
- (C) panel paintings
- (D) museum collections

**Question 22----32**

Crows are probably the most frequently met and easily identifiable members of the native fauna of the United States. The great number of tales, legends, and myths about these birds indicates that people have been exceptionally interested in them for a long time. On the other hand, when it comes to substantive -- particularly behavioral -- information, crows are less well known than many comparably common species and, for that matter, not a few quite uncommon ones: the endangered California condor, to cite one obvious example. There are practical reasons for this.

Crows are notoriously poor and aggravating subjects for field research. Keen observers and quick learners, they are astute about the intentions of other creatures, including researchers, and adept at avoiding them. Because they are so numerous, active, and monochromatic, it is difficult to distinguish one crow from another. Bands, radio transmitters, or other identifying devices can be attached to them, but this of course requires catching live crows, who are among the wariest and most untrappable of birds.

Technical difficulties aside, crow research is daunting because the ways of these birds are so complex and various. As preeminent is generalists, members of this species ingeniously exploit a great range of habitats and resources, and they can quickly adjust to changes in their circumstances. Being so educable, individual birds have markedly different interests and inclinations, strategies and scams. For example, one pet crow learned how to let a dog out of its kennel by pulling the pin on the door. When the dog escaped, the bird went into the kennel and ate its food.

22. What is the main topic of the passage?

- (A) The ways in which crows differ from other common birds
- (B) The myths and legends about crows
- (C) The characteristics that make crows difficult to study
- (D) The existing methods for investigating crow behavior

23. According to the first paragraph, what evidence is there that crows have interested people for a long time?

- (A) The large number of stories about crows.
- (B) The frequency with which crows are sighted
- (C) The amount of research that has been conducted on crows
- (D) The ease with which crows are identified

24. The word "comparable" in line 5 is closest in meaning to

- (A) interestingly
- (B) similar
- (C) otherwise
- (D) sometimes

25. In line 6, the author mention the endangered California condor as an example of a species that is
- (A) smaller than the crow
  - (B) easily identifiable
  - (C) featured in legends
  - (D) very rare
26. In line 6, the author mentions the endangered California condor as an example of a species that is
- (A) crows
  - (B) subjects
  - (C) intentions
  - (D) researchers
27. According to the second paragraph, crows are poor subjects for field research for all of the following reasons EXCEPT
- (A) They can successfully avoid observers.
  - (B) They are hard to distinguish from one another
  - (C) They can be quite aggressive.
  - (D) They are difficult to catch.
28. In the second paragraph, the author implies that using radio transmitters would allow a researcher who studies crow to
- (A) identify individual crows
  - (B) follow flocks of crows over long distances
  - (C) record the times when crows are most active
  - (D) help crows that become sick or injured
29. According to the third paragraph, which of the following is true about crows?
- (A) They seldom live in any one place for very long.
  - (B) They thrive in a wide variety of environments.
  - (C) They have marked preferences for certain kinds of foods.
  - (D) They use up the resources in one area before moving to another.
30. In line 19, the word "inclinations" is closest in meaning to
- (A) tricks
  - (B) opportunities
  - (C) preferences
  - (D) experiences
31. In lines 19-21, the author mentions a pet crow to illustrate which of the following?
- (A) The clever ways that crows solve problems
  - (B) The differences between pet crows and wild crows
  - (C) The ease with which crows can be tamed
  - (D) The affection that crows show to other creatures
32. Which of the following statements is supported by the passage?
- (A) Crows have relatively long lives.
  - (B) Crows have keen vision
  - (C) Crows are usually solitary
  - (D) Crows are very intelligent.

### **QUESTIONS 33-41**

In the early days of the United States, postal charges were paid by the recipient and charges varied with the distance carried. In 1825, the United States Congress permitted local postmasters to give letters to mail carriers for home delivery, but these carriers received no government salary and their entire compensation depended on what they were paid by the recipients of individual letters.

In 1847 the United States Post Office Department adopted the idea of a postage stamp, which of course simplified the payment for postal service but caused grumbling by those who did not like to prepay. Besides, the stamp covered only delivery to the post office and did not include carrying it to a private address. In Philadelphia, for example, with a population of 150,000, people still had to go to the post office to get their mail. The confusion and congestion of individual citizens looking for their letters was itself enough to discourage use of the mail. It is no wonder that, during the years of these cumbersome arrangements, private letter-carrying and express businesses developed. Although their activities were only semilegal, they thrived, and actually advertised that between Boston and Philadelphia they were a half-day speedier than the government mail. The government postal service lost volume to private competition and was not able to handle efficiently even the business it had.

Finally, in 1863, Congress provided that the mail carriers who delivered the mail from the post offices to private addresses should receive a government salary, and that there should be no extra charge for that delivery. But this delivery service was at first confined to cities, and free home delivery became a mark of urbanism. As late as 1887, a town had to have 10,000 people to be eligible for free home delivery. In 1890, of the 75 million people in the United States, fewer than 20 million had mail delivered free to their doors. The rest, nearly three-quarters of the population, still received no mail unless they went to their post office.

33. What does the passage mainly discuss?

- (A) The increased use of private mail services
- (B) The development of a government postal system
- (C) A comparison of urban and rural postal services
- (D) The history of postage stamps.

34. The word "varied" in line 2 could best be replaced by

- (A) increased
- (B) differed
- (C) returned
- (D) started

35. Which of the following was seen as a disadvantage of the postage stamp?

- (A) It had to be purchased by the sender in advance.
- (B) It increased the cost of mail delivery.
- (C) It was difficult to affix to letters.
- (D) It was easy to counterfeit.

36. Why does the author mention the city of Philadelphia in line 9?

- (A) It was the site of the first post office in the United States.  
(B) Its postal service was inadequate for its population.  
(C) It was the largest city in the United States in 1847.  
(D) It was commemorated by the first United States postage stamp.
37. The word "cumbersome" in line 13 is closest in meaning to  
(A) burdensome  
(B) handsome  
(C) loathsome  
(D) quarrelsome
38. The word "they" in line 15 refers to  
(A) Boston and Philadelphia  
(B) businesses  
(C) arrangements  
(D) letters
39. The private postal services of the nineteenth century claimed that they could do which of the following better than the government?  
(A) Deliver a higher volume of mail.  
(B) Deliver mail more cheaply.  
(C) Deliver mail faster.  
(D) Deliver mail to rural areas.
40. In 1863 the United States government began providing which of the following to mail carriers?  
(A) A salary  
(B) Housing  
(C) Transportation  
(D) Free postage stamps
41. The word "Confined" in line 21 is closest in meaning to  
(A) granted  
(B) scheduled  
(C) limited  
(D) recommended

**Questions 43-50**

Archaeology has long been an accepted tool for studying prehistoric cultures. Relatively recently the same techniques have been systematically applied to studies of the more immediate past. This has been called "historical archaeology," a term that is used in the United States to refer to any archaeological investigation into North American sites that postdate the arrival of Europeans.

Back in the 1930's and 1940's, when building restoration was popular, historical archaeology was primarily a tool of architectural reconstruction. The role of archaeologists was to find the foundations of historic buildings and then take a back seat to architects.

The mania for reconstruction had largely subsided by 1950's. Most people entering historical archaeology during this period came out of university anthropology departments, where they had studied prehistoric cultures. They were, by training social scientists, not historians, and their work tended to reflect this bias. The

questions they framed and the techniques they used were designed to help them understand, as scientists, how people behaved. But because they were treading on historical ground for which there was often extensive written documentation and because their own knowledge of these periods was usually limited, their contributions to American history remained circumscribed. Their reports, highly technical and sometimes poorly written, went unread.

More recently, professional archaeologists have taken over. These researchers have sought to demonstrate that their work can be a valuable tool not only of science but also of history, providing fresh insights into the daily lives of ordinary people whose existences might not otherwise be so well documented. This newer emphasis on archaeology as social history has shown great promise, and indeed work done in this area has led to a reinterpretation of the United States past.

In Kingston, New York, for example, evidence has uncovered that indicates that English goods were being smuggled into that city at a time when the Dutch supposedly controlled trading in the area. And in Sacramento an excavation at site of a fashionable nineteenth-century hotel revealed that garbage had been stashed in the building's basement despite sanitation laws to the contrary.

42. What does the passage mainly discuss?
- (A) Why historical archaeology was first developed
  - (B) How the methods and purpose of historical archaeology have changed
  - (C) The contributions architects make to historical archaeology
  - (D) The attitude of professional archaeologists toward historical archaeology
43. According to the first paragraph, what is a relatively new focus in archaeology?
- (A) Investigating the recess past
  - (B) Studying prehistoric cultures
  - (C) Excavating ancient sites in what is now the United States.
  - (D) Comparing ancient sites in what is now the United States.
44. According to the passage, when had historical archaeologists been trained as anthropologists?
- (A) Prior to the 1930's
  - (B) During the 1930's and 1940's
  - (C) During the 1950's and 1960's
  - (D) After the 1960's
45. The word "framed" in line 13 is closest in meaning to
- (A) understood
  - (B) read
  - (C) avoided
  - (D) posed
46. In the third paragraph, the author implies that the techniques of history and the techniques of social science are
- (A) quite different from each other
  - (B) equally useful in studying prehistoric cultures
  - (C) usually taught to students of archaeology
  - (D) both based on similar principles



47. The phrase "their contributions" in line 16 refers to the contributions of
- (A) social scientists
  - (B) prehistoric cultures
  - (C) historians
  - (D) documentation and knowledge
48. The author mentions an excavation at the site of a hotel in Sacramento in order to give an example of
- (A) a building reconstruction project
  - (B) the work of the earliest historical archaeologists
  - (C) a finding that conflicts with written records
  - (D) the kind of information that historians routinely examine
49. The word "supposedly" in line 26 is closest in meaning to
- (A) ruthlessly
  - (B) tightly
  - (C) barely
  - (D) seemingly
50. The word "sanitation" in line 29 is closest in meaning to
- (A) city
  - (B) housing
  - (C) health
  - (D) trade

## 1996-10

### Questions 1-8

When Jules Verne wrote *Journey to the Center of the Earth* in 1864, there were many conflicting theories about the nature of the Earth's interior. Some geologists thought that it contained a highly compressed ball of incandescent gas, while others suspected that it consisted of separate shells, each made of a different material. Today, well over a century later, there is still little direct evidence of what lies beneath our feet. Most of our knowledge of the Earth's interior comes not from mines or boreholes, but from the study of seismic waves - powerful pulses of energy released by earthquakes.

The way that seismic waves travel shows that the Earth's interior is far from uniform. The continents and the seabed are formed by the crust - a thin sphere of relatively light, solid rock. Beneath the crust lies the mantle, a very different layer that extends approximately halfway to the Earth's center. There the rock is the subject of a battle between increasing heat and growing pressure.

In its high levels, the mantle is relatively cool; at greater depths, high temperatures make the rock behave more like a liquid than a solid. Deeper still, the pressure is even more intense, preventing the rock from melting in spite of a higher temperature.

Beyond a depth of around 2,900 kilometers, a great change takes place and the mantle gives way to the core. Some seismic waves cannot pass through the core and others are bent by it. From this and other evidence, geologists conclude that the outer core is probably liquid, with a solid center. It is almost certainly made of iron, mixed

with smaller amounts of other elements such as nickel.

The conditions in the Earth's core make it a far more alien world than space. Its solid iron heart is subjected to unimaginable pressure and has a temperature of about 9,000oF. Although scientists can speculate about its nature, neither humans nor machines will ever be able to visit it.

1. The word "conflicting" in line 2 is closest in meaning to
  - (A) controlling
  - (B) outdated
  - (C) opposing
  - (D) important
2. What is today's richest source of information about the Earth's interior for geologists?
  - (A) Boreholes
  - (B) Shells
  - (C) Seismic waves
  - (D) Mines
3. The word "There" in line 12 refers to the
  - (A) mantle
  - (B) crust
  - (C) seabed
  - (D) Earth's center.
4. Which of the following is a primary characteristic of the Earth's mantle?
  - (A) Light, solid rock
  - (B) Uniformity of composition
  - (C) Dramatically increasing pressure
  - (D) Compressed, incandescent gas
5. The phrase "gives way to" in line 18 is closest in meaning to
  - (A) runs along
  - (B) rubs against
  - (C) turns into
  - (D) floats on
6. The word "it" in line 19 refers to
  - (A) mantle
  - (B) core
  - (C) change
  - (D) depth
7. Why does the author state in line 22 that the Earth's core is "more alien" than space?
  - (A) Government funds are not available to study the Earth's core.
  - (B) Scientists aren't interested in the characteristics of the Earth's core.
  - (C) It is impossible to go to the Earth's core to do research.
  - (D) The Earth's core is made of elements that are dangerous to humans.
8. The word "speculate" in line 24 is closest in meaning to
  - (A) report
  - (B) learn

- (C) worry
- (D) hypothesize

**Question 9-20**

Despite the road improvements of the turnpike era (1790-1830). Americans continued as in colonial times to depend wherever possible on water routes for travel and transportation. The larger rivers, especially the Mississippi and the Ohio, became increasingly useful as steamboats grew in number and improved in design.

River boats carried to New Orleans the corn and other crops of northwestern farmers, the cotton and tobacco of southwestern planters. From New Orleans, ships took the cargoes on to eastern seaports. Neither the farmers of the west nor the merchants of the east were completely satisfied with this pattern of trade. Farmers could get better prices for their crops if the alternative existed of sending them directly eastward to market and merchants could sell larger quantities of their manufactured goods if these could be transported more directly and more economically to the west.

New waterways were needed. Sectional jealousies and constitutional scruples stood in the way of action by the federal government and necessary expenditures were too great for private enterprise. If extensive canals were to be dug, the job would be up to the various states.

New York was the first to act. It had the natural advantage of a comparatively level route between the Hudson River and Lake Erie, through the only break in the entire Appalachian Mountain chain. Yet the engineering tasks were imposing. The distance was more than 350 miles and there were ridges to cross and a wilderness of woods and swamps to penetrate. The Erie Canal begun in 1817 and completed in 1825, was by far the greatest construction job that Americans had ever undertaken. It quickly proved a financial success as well. The prosperity of the Erie encouraged the state to enlarge its canal system by building several branches.

The range of the New York canal system was still further extended when the states of Ohio and Indiana, inspired by the success of the Erie Canal, provided water connections between Lake Erie and the Ohio River.

9. What does the passage suggest was the principal route for transporting crops to the east prior in 1825?
- (A) River to road
  - (B) Canal to river
  - (C) River to ocean
  - (D) Road to canal.
10. It can be inferred from the passage that shipping cargo east by way of New Orleans was
- (A) Advantageous for manufactures
  - (B) Inexpensive for merchants
  - (C) Not economical for farmers
  - (D) Considered economical by the government
11. The word "alternative" in line 9 is closest in meaning to
- (A) option

- (B) transition
  - (C) intention
  - (D) authorization
12. The word "them" in line 9 refers to
- (A) crops
  - (B) farmers
  - (C) prices
  - (D) merchants
13. Which of the following products would a northwestern farmer in the early nineteenth century be most likely to purchase from the east?
- (A) Grain
  - (B) Vegetables
  - (C) Textiles
  - (D) Fruit.
14. According to the passage, where was the Erie Canal located?
- (A) Between Ohio and Indiana.
  - (B) Along the Appalachian Mountains
  - (C) Between Lake Erie and the Ohio River
  - (D) Across New York State.
15. The word "imposing" in line 18 could best be replaced by
- (A) impractical
  - (B) successful
  - (C) demanding
  - (D) misleading
16. The word "penetrate" in line 20 is closest in meaning to
- (A) cut down
  - (B) go through
  - (C) fill up
  - (D) take over
17. The word "its" in line 22 refers to
- (A) prosperity
  - (B) Erie
  - (C) System
  - (D) State
18. The word "extended" in line 24 is closest in meaning to
- (A) increased
  - (B) constructed
  - (C) deepened
  - (D) measured
19. According to the passage, Indiana and Ohio supported the development of the New York canal system by
- (A) helping to build the Erie Canal.
  - (B) Building branches to connect it with the Ohio River
  - (C) Providing much of the water for the Erie Canal.

- (D) Contributing financially to the construction costs
20. What does the paragraph following the passage probably discuss?
- (A) Industry on Lake Erie
- (B) Canals in Ohio and Indiana
- (C) Sectional jealousies in Indiana and Ohio
- (D) Travel on the Erie Canal.

**Question 21-31**

Legend has it that sometime toward the end of the Civil War (1861-1865) a government train carrying oxen traveling through the northern plains of eastern Wyoming was caught in a snowstorm and had to be abandoned. The driver returned the next spring to see what had become of his cargo. Instead of the skeletons he had expected to find, he saw his oxen, living, fat, and healthy. How had they survived?

The answer lay in a resource that unknowing Americans lands trampled underfoot in their haste to cross the "Great American Desert" to reach lands that sometimes proved barren. In the eastern parts of the United States, the preferred grass for forage was a cultivated plant. It grew well with enough rain, then when cut and stored it would cure and become nourishing hay for winter feed. But in the dry grazing lands of the West that familiar bluejoint grass was often killed by drought. To raise cattle out there seemed risky or even hopeless.

Who could imagine a fairy-tale grass that required no rain and somehow made it possible for cattle to feed themselves all winter? But the surprising western wild grasses did just that. They had wonderfully convenient features that made them superior to the cultivated eastern grasses. Various known as buffalo grass, grama grass, or mesquite grass, not only were they immune to drought; but they were actually preserved by the lack of summer and autumn rains. They were not juicy like the cultivated eastern grasses, but had short, hard stems. And they did not need to be cured in a barn, but dried right where they grew on the ground. When they dried in this way, they remained naturally sweet and nourishing through the winter. Cattle left outdoors to fend for themselves thrived on this hay. And the cattle themselves helped plant the fresh grass year after year for they trampled the natural seeds firmly into the soil to be watered by the melting snows of winter and the occasional rains of spring. The dry summer air cured them much as storing in a barn cured the cultivated grasses.

21. What does the passage mainly discuss?
- (A) Western migration after the Civil War
- (B) The climate of the western United States
- (C) The raising of cattle.
- (D) A type of wild vegetation
22. What can be inferred by the phrase "Legend has it" in line 1?
- (A) The story of the train may not be completely factual.
- (B) Most history books include the story of the train.
- (C) The driver of the train invented the story.
- (D) The story of the train is similar to other ones from that time period.

23. The word "they" in line 5 refers to
- (A) plains
  - (B) skeletons
  - (C) oxen
  - (D) Americans
24. What can be inferred about the "Great American Desert" mentioned in line 7?
- (A) It was not originally assumed to be a fertile area.
  - (B) Many had settled there by the 1860's.
  - (C) It was a popular place to raise cattle before the Civil War.
  - (D) It was not discovered until the late 1800's.
25. The word "barren" in line 8 is closest in meaning to
- (A) lonely
  - (B) dangerous
  - (C) uncomfortable
  - (D) infertile.
26. The word "preferred" in line 8 is closest in meaning to
- (A) ordinary
  - (B) available
  - (C) required
  - (D) favored
27. Which of the following can be inferred about the cultivated grass mentioned in the second paragraph?
- (A) Cattle raised in the western United States refused to eat it.
  - (B) It would probably not grow in the western United States.
  - (C) It had to be imported into the United States.
  - (D) It was difficult for cattle to digest.
28. Which of the following was NOT one of the names given to the Western grasses?
- (A) Grama grass
  - (B) Bluejoint grass
  - (C) Buffalo grass
  - (D) Mesquite grass
29. Which of the following was NOT mentioned as a characteristic of western grasses?
- (A) They have tough stems.
  - (B) They are not affected by dry weather.
  - (C) They can be grown indoors.
  - (D) They contain little moisture.
30. The word "hard" in line 19 is closest in meaning to
- (A) firm
  - (B) severe
  - (C) difficult
  - (D) bitter
31. According to the passage, the cattle helped promote the growth of the wild grasses by
- (A) stepping on and pressing the seeds into the ground
  - (B) naturally fertilizing the soil

- (C) continually moving from one grazing area to another
- (D) eating only small quantities of grass.

**Question 32-44**

Seventeenth-century houses in colonial North America were simple structures that were primarily functional carrying over traditional designs that went back to the Middle Ages. During the first half of the eighteenth century, however, houses began to show a new elegance. As wealth increased, more and more colonists built fine houses.

Since architecture was not yet a specialized profession in the colonies, the design of buildings was left either to amateur designers or to carpenters who undertook to interpret architectural manuals imported from England. Inventories of colonial libraries show an astonishing number of these handbooks for builders, and the houses erected during the eighteenth century show their influence. Nevertheless, most domestic architecture of the first three-quarters of the eighteenth century displays a wide divergence of taste and freedom of application of the rules laid down in these books.

Increasing wealth and growing sophistication throughout the colonies resulted in houses of improved design, whether the material was wood, stone, or brick. New England still favored wood, though brick houses became common in Boston and other towns, where the danger of fire gave an impetus to the use of more durable material. A few houses in New England were built of stone, but only in Pennsylvania and adjacent areas was stone widely used in dwellings. An increased use of brick in houses and outbuildings is noticeable in Virginia and Maryland, but wood remained that most popular material even in houses built by wealthy landowners. In the Carolinas, even in closely packed Charleston, wooden houses were much more common than brick houses.

Eighteenth-century houses showed great interior improvements over their predecessors. Windows were made larger and shutters removed. Large, clear panes replaced the small leaded glass of the seventeenth century. Doorways were larger and more decorative. Fireplaces became decorative features of rooms. Walls were made of plaster or wood, sometimes elaborately paneled. White paint began to take the place of blues, yellows, greens, and lead colors, which had been popular for walls in the earlier years. After about 1730, advertisements for wallpaper styles in scenic patterns began to appear in colonial newspapers.

32. What does the passage mainly discuss?

- (A) The improved design of eighteenth-century colonial houses.
- (B) A comparison of eighteenth-century houses and modern houses.
- (C) The decorations used in eighteenth-century houses.
- (D) The role of carpenters in building eighteenth-century houses.

33. What was one of the main reasons for the change in architectural style in eighteenth-century North America?

- (A) More architects arrived in the colonies.
- (B) The colonists developed an interest in classical architecture.
- (C) Bricks were more readily available.

- (D) The colonists had more money to spend on housing.
34. According to the passage, who was responsible for designing houses in eighteenth-century North America?
- (A) Professional architects  
(B) Customers  
(C) Interior decorators  
(D) Carpenters.
35. The passage implies that the rules outlined in architectural manuals were
- (A) generally ignored  
(B) legally binding  
(C) not strictly adhered to  
(D) only followed by older builders
36. The word "divergence" in line 11 is closest in meaning to
- (A) description  
(B) development  
(C) difference  
(D) display
37. The word "durable" in line 15 is closest in meaning to
- (A) attractive  
(B) expensive  
(C) refined  
(D) long-lasting
38. Where was stone commonly used to build houses?
- (A) Virginia  
(B) Pennsylvania  
(C) Boston  
(D) Charleston
39. The word "dwellings" in line 17 is closest in meaning to
- (A) houses  
(B) towns  
(C) outbuildings  
(D) rural areas
40. The word "predecessors" in line 23 refers to
- (A) colonist who arrived in North America in the seventeenth century.  
(B) houses constructed before the eighteenth century  
(C) interior improvements  
(D) wooden houses in Charleston
41. The author mentions elaborately paneled walls in line 26 as an example of
- (A) how the interior design of colonial houses was improved.  
(B) why walls were made of wood or plaster.  
(C) How walls were made stronger in the eighteenth century.  
(D) What kind of wood was used for walls after 1730.
42. The word "elaborately" in line 26 is closest in meaning to
- (A) done in great detail



- (B) put together carefully
- (C) using many colors
- (D) reinforced structurally

43. What does the author imply about the use of wallpaper before 1730?

- (A) Wallpaper samples appeared in the architectural manuals.
- (B) Wallpaper was the same color as the wall paints used
- (C) Patterned wallpaper was not widely used.
- (D) Wallpaper was not used in stone house.

44. Where in the passage does the author give a reason why brick was the preferred material for houses in some urban areas?

- (A) Lines 9-11
- (B) Lines 13-15
- (C) Lines 17-19
- (D) Lines 23-24

**Question 45-50**

Bloodhounds are biologically adapted to trailing their prey. The process by which the nose recognizes an odor is not fully understood, but there are apparently specific receptor sites for specific odors. In one explanation, recognition occurs when a scent molecule fits into its corresponding receptor site, like a key into a lock, causing a mechanical or chemical change in the cell. Bloodhounds apparently have denser concentrations of receptor sites tuned to human scents.

When a bloodhound trails a human being, what does it actually smell? The human body, which consists of about 60 trillion living cells, sheds exposed skin at a rate of 50 million cells a day. So even a trail that has been dispersed by breezes may still seem rich to a bloodhound. The body also produces about 31 to 50 ounces of sweat a day. Neither this fluid nor the shed skin cells have much odor by themselves, but the bacteria working on both substances is another matter. One microbiologist estimates the resident bacteria population of a clean square centimeter of skin on the human shoulder at "multiples of a million." As they go about their daily business breaking down lipids, or fatty substances, on the skin, these bacteria release volatile substances that usually strike the bloodhound's nose as an entire constellation of distinctive scents.

45. What does the passage mainly discuss?

- (A) Why people choose bloodhounds for household pets
- (B) How a bloodhound's sense of smell works
- (C) How humans compensate for an underdeveloped sense of smell
- (D) The way in which bacteria work on skin cells and body sweat.

46. The author compares a scent molecule with a

- (A) key
- (B) lock
- (C) cell
- (D) bloodhound

47. In line 7, the word "it" refers to

- (A) bloodhound
  - (B) human being
  - (C) smell
  - (D) body
48. According to the passage, how many cells of skin does the human body rid itself of every day?
- (A) 60 trillion
  - (B) 50 million
  - (C) 1 million
  - (D) Between 31 and 50
49. In line 10, the word "rich" is used to mean that a trail is
- (A) paved with precious materials
  - (B) a profitable business to get into
  - (C) a very costly undertaking
  - (D) filled with an abundance of clues.
50. Which of the following acts as a stimulus in the production of the human scent?
- (A) Sweat
  - (B) Dead skin cells
  - (C) Bacteria
  - (D) Fatty substances

## 1996-12

### Questions 1-9

It is commonly believed that in the United States that school is where people to get an education. Nevertheless, it has been said that today children interrupt their education to go to school. The distinction between schooling and education implied by this remark is important.

Education is much more open-ended and all-inclusive than schooling. Education knows no bounds. It can take place anywhere, whether in the shower or on the job, whether in a kitchen or on a tractor. It includes both the formal leaning that takes place in school sand the whole universe of informal leaning. The agents of education can range form a revered grandparent o the people debating politics on the radio, from a child to a distinguished scientist. Whereas schooling has a certain predictability, education quite often produces surprises. A chance conversation with stranger may lead a person to discover how little is known of other religions. People are engaged in education from infancy on. Education, then, is a very broad, inclusive term. It is a lifelong process, a process that starts long before the start of school, and one that should be an integral part of one's entire life.

Schooling, on the other hand, is a specific, formalized process, whose general pattern varies little from one setting to the next. Throughout a country, children arrive at school at approximately the same time, take assigned seats, are taught by an adult, use similar textbooks, do homework, take exams, and so on. The slices of reality that are to be learned, whether they are the alphabet or an understanding of the workings of governments, have usually been limited by the boundaries of the subject being taught.

For example, high schools students know that they are not likely to find out in their classes the truth about political problems in their communities or what the newest filmmakers are experimenting with. There are definite conditions surrounding the formalized process of schooling.

1. What is the main idea of the passage?
  - (A) The best schools teach a wide variety of subjects.
  - (B) Education and schooling are quite different experiences.
  - (C) Students benefit from schools, which require long hours and homework.
  - (D) The more years students go to school the better their education is.
2. What does the author probably mean by using the expression "Children interrupt their education to go to school" (lines 2-3)?
  - (A) Going to several different schools is educationally beneficial.
  - (B) School vacations interrupt the continuity of the school year.
  - (C) Summer school makes the school year too long.
  - (D) All of life is an education.
3. The word "bounds" in line 6 is closest in meaning to
  - (A) rules
  - (B) experiences
  - (C) limits
  - (D) exceptions
4. The word "chance" in line 11 is closest in meaning to
  - (A) unplanned
  - (B) unusual
  - (C) lengthy
  - (D) lively
5. The word "integral" in line 15 is closest in meaning to
  - (A) an equitable
  - (B) a profitable
  - (C) a pleasant
  - (D) an essential
6. The word "they" in line 20 refers to
  - (A) slices of reality
  - (B) similar textbooks
  - (C) boundaries
  - (D) seats
7. The phrase "For example", line 22, introduces a sentence that gives example of
  - (A) similar textbooks
  - (B) the results of schooling
  - (C) the working of a government
  - (D) the boundaries of classroom subject
8. The passage supports which of the following conclusions?
  - (A) Without formal education, people would remain ignorant.
  - (B) Education systems need to be radically reformed.

- (C) Going to school is only part of how people become educated.
- (D) Education involves many years of professional training.

9. The passage is organized by

- (A) listing and discussing several educational problems
- (B) contrasting the meanings of two related words
- (C) narrating a story about excellent teachers
- (D) giving examples of different kinds of schools

### **Questions 10-18**

The hard, rigid plates that form the outermost portion of the Earth are about 100 kilometers thick. These plates include both the Earth's crust and the upper mantle.

The rocks of the crust are composed mostly of minerals with light elements, like aluminum and sodium, while the mantle contains some heavier elements, like iron and magnesium. Together, the crust and upper mantle that form the surface plates are called the lithosphere. This rigid layer floats on the denser material of the lower mantle the way a wooden raft floats on a pond. The plates are supported by a weak, plastic layer of the lower mantle called the asthenosphere. Also like a raft on a pond, the lithospheric plates are carried along by slow currents in this more fluid layer beneath them.

With an understating of plate tectonics, geologists have put together a new history for the Earth's surface. About 200 million years ago, the plates at the Earth's surface formed a "supercontinent" called Pangaea. When this supercontinent started to tear apart because of plate movement, Pangaea first broke into two large continental masses with a newly formed sea that grew between the land areas as the depression filled with water. The southern one-which included the modern continents of South America, Africa, Australia, and Antarctic- is called Gondwanaland. The northern one-with North America, Europe, and Asia-is called Laurasi. North America tore away from Europe about 180 million years ago, forming the northern Atlantic Ocean.

Some of the lithospheric plates carry ocean floor and others carry land masses or a combination of the two types. The movement of the lithospheric plates is responsible for earthquakes, volcanoes, and the Earth's largest mountain ranges. Current understating of the interaction between different plates explains why these occur where they do. For example, the edge of the Pacific Ocean has been called the "Ring of Fire" because so many volcanic eruptions and earthquakes happen there. Before the 1960's, geologist could not explain why active volcanoes and strong earthquakes were concentrated in that region. The theory of plate tectonics gave them an answer.

10. With which of the following topic is the passage mainly concerned?

- (A) The contributions of the theory of plate tectonics to geological knowledge
- (B) The mineral composition of the Earth's crust
- (C) The location of the Earth's major plates
- (D) The methods used by scientists to measure plate movement

11. According to the passage, the lithospheric plates are given support by the

- (A) upper mantle

- (B) ocean floor  
(C) crust  
(D) asthenosphere
12. The author compares the relationship between the lithosphere and the asthenosphere to which of the following?  
(A) Lava flowing from a volcano  
(B) A boat floating on the water  
(C) A fish swimming in a pond  
(D) The erosion of rocks by running water
13. The word "one" in line 16 refers to  
(A) movements  
(B) masses  
(C) sea  
(D) depression
14. According to the passage, the northern Atlantic Ocean was formed when  
(A) Pangaea was created  
(B) Plate movement ceased  
(C) Gondwanaland collided with Pangaea  
(D) Parts of Laurasia separated from the each other
15. The word "carry" in line 20 could best be replaced by  
(A) damage  
(B) squeeze  
(C) connect  
(D) support
16. In line 27, the word "concentrated" is closest in meaning to which of the following?  
(A) allowed  
(B) clustered  
(C) exploded  
(D) strengthened
17. Which of the following can be inferred about the theory of plate tectonics?  
(A) It is no longer of great interest to geologists.  
(B) It was first proposed in the 1960's.  
(C) It fails to explain why earthquakes occur.  
(D) It refutes the theory of the existence of a supercontinent.
18. The paragraph following the passage most probably discusses  
(A) why certain geological events happen where they do  
(B) how geological occurrences have changed over the years  
(C) the most unusual geological developments in the Earth's history  
(D) the latest innovations in geological measurement

**Questions 19-28**

In the United States in the early 1800's, individual state governments had more effect on the economy than did the federal government. States chartered manufacturing, baking, mining, and transportation firms and participated in the

construction of various internal improvements such as canals, turnpikes, and railroads. The states encouraged internal improvements in two distinct ways: first, by actually establishing state companies to build such improvements; second, by providing part of the capital for mixed public-private companies setting out to make a profit.

In the early nineteenth century, state governments also engaged in a surprisingly large amount of direct regulatory activity, including extensive licensing and inspection programs. Licensing targets reflected both similarities in and differences between the economy of the nineteenth century and that of today: in the nineteenth century, state regulation through licensing fell especially on peddlers innkeepers, and retail merchants of various kinds. The perishable commodities of trade generally came under state inspection, and such important frontier staples as lumber and gunpowder were also subject to state control. Finally, state governments experimented with direct labor and business regulation designed to help the individual laborer or consumer, including setting maximum limits on hours of work and restrictions on price-fixing by businesses.

Although the states dominated economic activity during this period, the federal government was not inactive. Its goals were the facilitation of western settlement and the development of native industries. Toward these ends the federal government pursued several courses of action. It established a national bank to stabilize banking activities in the country and, in part, to provide a supply of relatively easy money to the frontier, where it was greatly needed for settlement. It permitted access to public western lands on increasingly easy terms, culminating in the Homestead Act of 1862, by which title to land could be claimed on the basis of residence alone. Finally, it set up a system of tariffs that was basically protectionist in effect, although maneuvering for position by various regional interests produced frequent changes in tariff rates throughout the nineteenth century.

19. What does the passage mainly discuss?

- (A) States' rights versus federal rights
- (B) The participation of state governments in railroad, canal, and turnpike construction
- (C) The roles of state and federal governments in the economy of the nineteenth century
- (D) Regulatory activity by state governments

20. The word "effect" in line 2 is closest in meaning to

- (A) value
- (B) argument
- (C) influence
- (D) restraint

21. All of the following are mentioned in the passage as areas that involved state governments in the nineteenth century EXCEPT

- (A) mining
- (B) banking
- (C) manufacturing
- (D) higher education

22. The word "distinct" in line 5 is closest in meaning to

- (A) separate

- (B) innovative  
(C) alarming  
(D) provocative
23. It can be inferred from the first paragraph that in the nineteenth century canals and railroads were
- (A) built with money that came from the federal government  
(B) much more expensive to build than they had been previously  
(C) built predominantly in the western part of the country  
(D) sometimes built in part by state companies
24. The regulatory activities of state governments included all of the following EXCEPT
- (A) licensing of retail merchants  
(B) inspecting materials used in turnpike maintenance  
(C) imposing limits on price fixing  
(D) control of lumber
25. The word "setting" in line 17 is closest in meaning to
- (A) discussing  
(B) analyzing  
(C) establishing  
(D) avoiding
26. The word "ends" in line 20 is closest in meaning to
- (A) Benefits  
(B) decisions  
(C) services  
(D) goals
27. According to the passage, which of the following is true of the Homestead Act of 1862?
- (A) It made it increasingly possible for settlers to obtain land in the West.  
(B) It was a law first passed by state governments in the West.  
(C) It increased the money supply in the West.  
(D) It established tariffs in a number of regions
28. Which of the following activities was the responsibility of the federal government in the nineteenth century?
- (A) Control of the manufacture of gunpowder  
(B) Determining the conditions under which individuals worked  
(C) Regulation of the supply of money  
(D) Inspection of new homes built on western lands

**Questions 29-38**

Life originated in the early seas less than a billion years after the Earth was formed. Yet another three billion years were to pass before the first plants and animals appeared on the continents. Life's transition from the sea to the land was perhaps as much of an evolutionary challenge as was the genesis of life.

What forms of life were able to make such a drastic change in lifestyle? The traditional view of the first terrestrial organisms is based on megafossils—relatively large specimens of essentially whole plants and animal. Vascular plants, related to

modern seed plants and ferns, left the first comprehensive megafossil record. Because of this, it has been commonly assumed that the sequence of terrestrialization reflected the evolution of modern terrestrial ecosystems. In this view, primitive vascular plants first colonized the margins of continental waters, followed by animals that fed on the plants, and lastly by animals that preyed on the plant-eater. Moreover, the megafossils suggest that terrestrial life appeared and diversified explosively near the boundary between the Silurian and the Devonian periods, a little more than 400 million years ago.

Recently, however, paleontologists have been taking a closer look at the sediments below this Silurian-Devonian geological boundary. It turns out that some fossils can be extracted from these sediments by putting the rocks in an acid bath. The technique has uncovered new evidence from sediments that were deposited near the shores of the ancient oceans-plant microfossils and microscopic pieces of small animals. In many instances the specimens are less than one-tenth of a millimeter in diameter. Although they were entombed in the rocks for hundreds of millions of years, many of the fossils consist of the organic remains of the organism.

These newly discovered fossils have not only revealed the existence of previously unknown organisms, but have also pushed back these dates for the invasion of land by multicellular organisms. Our views about the nature of the early plant and animal communities are now being revised. And with those revisions come new speculations about the first terrestrial life-forms.

29. The word "drastic" in line 5 is closest in meaning to

- (A) widespread
- (B) radial
- (C) progressive
- (D) risky

30. According to the theory that the author calls "the traditional view", what was the first form of life to appear on land?

- (A) Bacteria
- (B) Meat-eating animals
- (C) Plant-eating animals
- (D) Vascular plants

31. According to the passage, what happened about 400 million years ago?

- (A) Many terrestrial life-forms died out.
- (B) New life-forms on land developed at a rapid rate.
- (C) The megafossils were destroyed by floods.
- (D) Life began to develop in the ancient seas.

32. The word "extracted" in line 18 is closest in meaning to

- (A) located
- (B) preserved
- (C) removed
- (D) studied

33. What can be inferred from the passage about the fossils mentioned in lines 17-20?



- (A) They have not been helpful in understanding the evolution of terrestrial life.  
(B) They were found in approximately the same numbers as vascular plant fossils.  
(C) They are older than the magafossils.  
(D) They consist of modern life forms.
34. The word "instances" in line 21 is closest in meaning to  
(A) methods  
(B) processes  
(C) cases  
(D) reasons
35. The word "they" in line 22 refers to  
(A) rocks  
(B) shores  
(C) oceans  
(D) specimens
36. The word "entombed" in line 22 is closest in meaning to  
(A) crushed  
(B) trapped  
(C) produced  
(D) excavated
37. Which of the following resulted from the discovery of microscopic fossils?  
(A) The time estimate for the first appearance of terrestrial life-forms was revised  
(B) Old techniques for analyzing fossils were found to have new uses.  
(C) The origins of primitive sea life were explained.  
(D) Assumptions about the locations of ancient seas were changed.
38. With which of the following conclusions would the author probably agree?  
(A) The evolution of terrestrial life was as complicated as the origin of life itself.  
(B) The discovery of microfossils supports the traditional view of how terrestrial life evolved.  
(C) New species have appeared at the same rate over the course of the last 400 million years.  
(D) The technology used by paleontologists is too primitive to make accurate determinations about ages of fossils.

**Questions 39-50**

What we today call America folk art was, indeed, art of, by, and for ordinary, everyday "folks" who, with increasing prosperity and leisure, created a market for art of all kinds, and especially for portraits. Citizens of prosperous, essentially middle-class republics-whether ancient Romans, seventeenth-century Dutch burghers, or nineteenth-century Americans-have always shown a marked taste for portraiture. Starting in the late eighteenth century, the United States contained increasing numbers of such people, and of the artists how could meet their demands.

The earliest American folk art portraits come, not surprisingly, from New England-especially Connecticut and Massachusetts-for this was a wealthy and populous region and the center of a strong craft tradition. Within a few decades after the signing of the Declaration of Independence in 1776, the population was pushing westward, and portrait painters could be found at work in western New York, Ohio,

Kentucky, Illinois, and Missouri. Midway through its first century as a nation, the United States' population had increased roughly five times, and eleven new states had been added to the original thirteen. During these years the demand for portraits grew and grew, eventually to be satisfied by the camera. In 1839 the daguerreotype was introduced to America, ushering in the age of photography, and within a generation the new invention put an end to the popularity of painted portraits. Once again an original portrait became a luxury, commissioned by the wealthy and executed by the professional.

But in the heyday of portrait painting—from the late eighteenth century until the 1850's—anyone with a modicum of artistic ability could become a limner, as such a portraitist was called. Local craftspeople—sign, coach, and house painters—began to paint portraits as a profitable sideline; sometimes a talented man or woman who began by sketching family members gained a local reputation and was besieged with requests for portraits; artists found it worth their while to pack their paints, canvases, and brushes and to travel the countryside, often combining house decorating with portrait painting.

39. In lines 4-5 the author mentions seventeenth-century Dutch burghers as an example of a group that

- (A) consisted mainly of self-taught artists
- (B) appreciated portraits
- (C) influenced American folk art
- (D) had little time for the arts

40. The word "market" in line 5 is closest in meaning to

- (A) pronounced
- (B) fortunate
- (C) understandable
- (D) mysterious

41. According to the passage, where were many of the first American folk art portraits painted?

- (A) In western New York
- (B) In Illinois and Missouri
- (C) In Connecticut and Massachusetts
- (D) In Ohio

42. The word "this" in line 9 refers to

- (A) a strong craft tradition
- (B) American folk art
- (C) New England
- (D) western New York

43. How much did the population of the United States increase in the first fifty years following independence?

- (A) It became three times larger.
- (B) It became five times larger.
- (C) It became eleven times larger.
- (D) It became thirteen times larger.

44. The phrase "ushering in" in line 17 is closest in meaning to
- (A) beginning
  - (B) demanding
  - (C) publishing
  - (D) increasing
45. The relationship between the daguerreotype (line 16) and the painted portrait is similar to the relationship between the automobile and the
- (A) highway
  - (B) driver
  - (C) horse-drawn carriage
  - (D) engine
46. According to the passage, which of the following contributed to a decline in the demand for painted portraits?
- (A) The lack of a strong craft tradition
  - (B) The westward migration of many painters
  - (C) The growing preference for landscape paintings
  - (D) The invention of the camera
47. The word "executed" in line 19 is closest in meaning to
- (A) sold
  - (B) requested
  - (C) admired
  - (D) created
48. The author implies that most limners (line 22)
- (A) received instruction from traveling teachers
  - (B) were women
  - (C) were from wealthy families
  - (D) had no formal art training
49. The word "sketching" in line 25 is closest in meaning to
- (A) drawing
  - (B) hiring
  - (C) helping
  - (D) discussing
50. Where in the passage does the author provide definition?
- (A) Lines 3-6
  - (B) Lines 8-10
  - (C) Lines 13-15
  - (D) Lines 21-23

## 1997-01

### Question 1-8

Both the number and the percentage of people in the United States involved in nonagricultural pursuits expanded rapidly during the half century following the Civil War, with some of the most dramatic increases occurring in the domains of transportation,

manufacturing, and trade and distribution. The development of the railroad and telegraph systems during the middle third of the nineteenth century led to significant improvements in the speed, volume, and regularity of shipments and communications, making possible a fundamental transformation in the production and distribution of goods.

In agriculture, the transformation was marked by the emergence of the grain elevators, the cotton presses, the warehouses, and the commodity exchanges that seemed to so many of the nation's farmers the visible sign of a vast conspiracy against them. In manufacturing, the transformation was marked by the emergence of a "new factory system" in which plants became larger, more complex, and more systematically organized and managed. And in distribution, the transformation was marked by the emergence of the jobber, the wholesaler, and the mass retailer. These changes radically altered the nature of work during the half century between 1870 and 1920.

To be sure, there were still small workshops, where skilled craftspeople manufactured products ranging from newspapers to cabinets to plumbing fixtures. There were the sweatshops in city tenements, where groups of men and women in household settings manufactured clothing or cigars on a piecework basis. And there were factories in occupations such as metalwork where individual contractors presided over what were essentially handicraft proprietorships that coexisted within a single building. But as the number of wage earners in manufacturing rose from 2.7 million in 1880 to 4.5 million in 1900 to 8.4 million in 1920, the number of huge plants like the Baldwin Locomotive Works in Philadelphia burgeoned, as did the size of the average plant. (The Baldwin Works had 600 employees in 1855, 3,000 in 1875, and 8,000 in 1900.) By 1920, at least in the northeastern United States where most of the nation's manufacturing wage earners were concentrated, three-quarters of those worked in factories with more than 100 employees and 30 percent worked in factories with more than 1,000 employees.

1. The word "domains" in line 3 is closest in meaning to
  - (A) fields
  - (B) locations
  - (C) organizations
  - (D) occupations
2. What can be inferred from the passage about the agricultural sector of the economy after the Civil War?
  - (A) New technological developments had little effect on farmers.
  - (B) The percentage of the total population working in agriculture declined.
  - (C) Many farms destroyed in the war were rebuilt after the war.
  - (D) Farmers achieved new prosperity because of better rural transportation.
3. The word "fundamental" in line 7 is closest in meaning to
  - (A) possible
  - (B) basic
  - (C) gradual
  - (D) unique
4. Which of the following was NOT mentioned as part of the "new factory system?"
  - (A) A change in the organization of factories.

- (B) A growth in the complexity of factories.  
(C) An increase in the size of factories.  
(D) An increase in the cost of manufacturing industrial products.
5. Which of the following statements about manufacturing before 1870 can be inferred from the passage?
- (A) Most manufacturing activity was highly organized.  
(B) Most manufacturing occurred in relatively small plants.  
(C) The most commonly manufactured goods were cotton presses.  
(D) Manufacturing and agriculture each made up about half of the nation's economy.
6. The word "skilled" in line 16 is closest in meaning to
- (A) hardworking  
(B) expert  
(C) well-paid  
(D) industrial
7. The word "presided over" in line 20 are closest in meaning to
- (A) managed  
(B) led to  
(C) worked in  
(D) produced
8. The author mentions the Baldwin Locomotive Works in lines 23-24 because it was
- (A) a well-known metal-works  
(B) the first plant of its kind in Philadelphia  
(C) typical of the large factories that were becoming more common  
(D) typical of factories that consisted of a single building

**Question 9-19**

Stars may be spheres, but not every celestial object is spherical. Objects in the universe show a variety of shapes: round planets (some with rings), tailed comets, wispy cosmic gas and dust clouds, ringed nebulae, pinwheel-shaped spiral galaxies, and so on. But none of the shapes on this list describes the largest single entities in the universe. These are the double radio sources, galaxies with huge clouds of radio emission that dwarf the visible galaxies, sometimes by a factor of a hundred or more. Stretching over distances greater than a million light-years, these radio-emitting regions resemble twin turbulent gas clouds, typically forming dumbbell-like shapes with the visible galaxy (when it is visible) in the center.

These double radio sources present astronomers with a puzzle. Their radio emission arises from the synchrotron process, in which electrons accelerated to nearly the speed of light move through magnetic fields. However, in view of the rate at which the radio sources emit energy, they should disappear in a few million years as their electrons slow down and cease producing radiation. Somehow new electrons must be continually accelerated to nearly the speed of light, otherwise, by now almost none of the double radio sources would be observed.

With the advent of high-resolution radio interferometers during the late 1970's, part of the answer became clear: the electrons are produced in jets that are shot out in

opposite directions from the center of galaxy. Remarkably narrow and highly directional, the jets move outward at speeds close to the speed of light. When the jets strike the highly rarefied gas that permeates intergalactic space, the fast-moving electrons lose their highly directional motion and form vast clouds of radio-emitting gas.

Cosmic jets have ranked among the hottest topics of astronomical research in recent years as astronomers strive to understand where they come from. Why should a galaxy eject matter at such tremendous speeds in two narrow jets? And why are such jets not seen in the Milky Way?

9. The word "celestial" in line 1 could best be replaced by

- (A) visible
- (B) astronomical
- (C) glowing
- (D) scientific

10. The word "entities" in line 4 is closest in meaning to

- (A) factors
- (B) processes
- (C) objects
- (D) puzzles

11. In the first paragraph, the author describes objects in the universe in terms of their

- (A) color
- (B) origin
- (C) location
- (D) shape

12. Which of the following is the best representation of the clouds of radio emission described in the first paragraph?

- (A)
- (B)
- (C)
- (D)

13. According to the passage, scientists do not fully understand why double radio sources

- (A) have not eventually disappeared
- (B) cannot be observed with a telescope
- (C) are beginning to slow down
- (D) are not as big as some planets and stars

14. The word "their" in line 22 refers to

- (A) speeds
- (B) directions
- (C) electrons
- (D) clouds

15. According to the passage, what happens when electrons and gas collide in space?

- (A) The gas becomes more condensed
- (B) The gas becomes less radiated
- (C) The electrons disperse

- (D) The electrons become negatively charged
16. The author suggests that astronomers consider the study of cosmic jets to be
- (A) an obsolete scientific field
  - (B) an unprofitable venture
  - (C) an intriguing challenge
  - (D) a subjective debate
17. In what lines does the passage compare the size of double radio sources with that of other galaxies?
- (A) Lines 4-6
  - (B) Lines 12-14
  - (C) Lines 19-20
  - (D) Lines 23-24
18. Where in the passage does the author mention a technology that aided in the understanding of double radio sources?
- (A) Line 2
  - (B) Line 7
  - (C) Line 17
  - (D) Line 21
19. The paragraph following the passage most likely discusses
- (A) specific double radio sources
  - (B) an explanation of the synchrotron process
  - (C) possible reasons for the presence of cosmic jets
  - (D) the discovery of the first double radio sources.

**Questions 20-28**

The sculptural legacy that the new United States inherited from its colonial predecessors was far from a rich one, and in fact, in 1776 sculpture as an art form was still in the hands of artisans and craftspeople. Stone carvers engraved their motifs of skulls and crossbones and other religious icons of death into the gray slabs that we still see standing today in old burial grounds. Some skilled craftspeople made intricately carved wooden ornamentations for furniture or architectural decorations, while others carved wooden shop signs and ships' figureheads. Although they often achieved expression and formal excellence in their generally primitive style, they remained artisans skilled in the craft of carving and constituted a group distinct from what we normally think of as "sculptors" in today's use of the word.

On the rare occasion when a fine piece of sculpture was desired, Americans turned to foreign sculptors, as in the 1770's when the cities of New York and Charleston, South Carolina, commissioned the Englishman Joseph Wilton to make marble statues of William Pitt. Wilton also made a lead equestrian image of King George III that was created in New York in 1770 and torn down by zealous patriots six years later. A few marble memorials with carved busts, urns, or other decorations were produced in England and brought to the colonies to be set in the walls of churches-as in King's Chapel in Boston. But sculpture as a high art, practiced by artists who knew both the artistic theory of their Renaissance-Baroque-Rococo predecessors and the various

technical procedures of modeling, casting, and carving rich three-dimensional forms, was not known among Americans in 1776. Indeed, for many years thereafter, the United States had two groups from which to choose - either the local craftspeople or the imported talent of European sculptors.

The eighteenth century was not one in which powerful sculptural conceptions were developed. Add to this the timidity with which unschooled artisans - originally trained as stonemasons, carpenters, or cabinetmakers - attacked the medium from which they sculpture made in the United States in the late eighteenth century.

20. What is the main idea of the passage?
- (A) There was great demand for the work of eighteenth-century artisans.
  - (B) Skilled sculptors did not exist in the United States in the 1770's.
  - (C) Many foreign sculptors worked in the United States after 1776.
  - (D) American sculptors were hampered by a lack of tools and materials.
21. The word "motifs" in line 3 is closest in meaning to
- (A) tools
  - (B) prints
  - (C) signatures
  - (D) designs
22. The work of which of the following could be seen in burial grounds?
- (A) European sculptors
  - (B) Carpenters
  - (C) Stone carvers
  - (D) Cabinetmakers
23. The word "other" in line 6 refers to
- (A) craftspeople
  - (B) decorations
  - (C) ornamentations
  - (D) shop signs
24. The word "distinct" in line 9 is closest in meaning to
- (A) separate
  - (B) assembled
  - (C) notable
  - (D) inferior
25. The word "rare" in line 11 is closest in meaning to
- (A) festive
  - (B) infrequent
  - (C) delightful
  - (D) unexpected
26. Why does the author mention Joseph Wilton in line 13?
- (A) He was an English sculptor who did work in the United States.
  - (B) He was well known for his wood carvings
  - (C) He produced sculpture for churches.
  - (D) He settled in the United States in 1776.



27. What can be inferred about the importation of marble memorials from England?
- (A) Such sculpture was less expensive to produce locally than to import
  - (B) Such sculpture was not available in the United States.
  - (C) Such sculpture was as prestigious as those made locally.
  - (D) The materials found abroad were superior.
28. How did the work of American carvers in 1776 differ from that of contemporary sculptors?
- (A) It was less time-consuming
  - (B) It was more dangerous.
  - (C) It was more expensive.
  - (D) It was less refined.

**Question 29-39**

Large animals that inhabit the desert have evolved a number of adaptations for reducing the effects of extreme heat. One adaptation is to be light in color, and to reflect rather than absorb the Sun's rays. Desert mammals also depart from the normal mammalian practice of maintaining a constant body temperature. Instead of trying to keep down the body temperature deep inside the body, which would involve the expenditure of water and energy, desert mammals allow their temperatures to rise to what would normally be fever height, and temperatures as high as 46 degrees Celsius have been measured in Grant's gazelles. The overheated body then cools down during the cold desert night, and indeed the temperature may fall unusually low by dawn, as low as 34 degrees Celsius in the camel. This is an advantage since the heat of the first few hours of daylight is absorbed in warming up the body, and an excessive buildup of heat does not begin until well into the day.

Another strategy of large desert animals is to tolerate the loss of body water to a point that would be fatal for non-adapted animals. The camel can lose up to 30 percent of its body weight as water without harm to itself, whereas human beings die after losing only 12 to 13 percent of their body weight. An equally important adaptation is the ability to replenish this water loss at one drink. Desert animals can drink prodigious volumes in a short time, and camels have been known to imbibe over 100 liters in a few minutes. A very dehydrated person, on the other hand, cannot drink enough water to rehydrate at one session, because the human stomach is not sufficiently big and because a too rapid dilution of the body fluids causes death from water intoxication. The tolerance of water loss is of obvious advantage in the desert, as animals do not have to remain near a water hole but can obtain food from grazing sparse and far-flung pastures. Desert-adapted mammals have the further ability to feed normally when extremely dehydrated, it is a common experience in people that appetite is lost even under conditions of moderate thirst.

29. What is the main topic of the passage?
- (A) Weather variations in the desert
  - (B) Adaptations of desert animals
  - (C) Diseases of desert animals
  - (D) Human use of desert animals.

30. According to the passage, why is light coloring an advantage to large desert animals?
- (A) It helps them hide from predators.
  - (B) It does not absorb sunlight as much as dark colors.
  - (C) It helps them see their young at night
  - (D) It keeps them cool at night.
31. The word "maintaining" in line 4 is closest in meaning to
- (A) measuring
  - (B) inheriting
  - (C) preserving
  - (D) delaying
32. The author uses of Grant's gazelle as an example of
- (A) an animal with a low average temperature
  - (B) an animal that is not as well adapted as the camel
  - (C) a desert animal that can withstand high body temperatures
  - (D) a desert animal with a constant body temperature
33. When is the internal temperature of a large desert mammal lower?
- (A) Just before sunrise
  - (B) In the middle of the day
  - (C) Just after sunset
  - (D) Just after drinking
34. The word "tolerate" in line 13 is closest in meaning to
- (A) endure
  - (B) replace
  - (C) compensate
  - (D) reduce
35. What causes water intoxication?
- (A) Drinking too much water very quickly
  - (B) Drinking polluted water
  - (C) Bacteria in water
  - (D) Lack of water.
36. What does the author imply about desert-adapted mammals?
- (A) They do not need to eat much food.
  - (B) They can eat large quantities quickly
  - (C) They easily lose their appetites.
  - (D) They can travel long distances looking for food.
37. Why does the author mention humans in the second paragraph?
- (A) To show how they use camels.
  - (B) To contrast them to desert mammals.
  - (C) To give instructions about desert survival.
  - (D) To show how they have adapted to desert life.
38. The word "obtain" in line 23 is closest in meaning to
- (A) digest
  - (B) carry
  - (C) save

(D) get

39. Which of the following is NOT mentioned as an adaptation of large desert animals?

(A) Variation in body temperatures

(B) Eating while dehydrated

(C) Drinking water quickly

(D) Being active at night.

### **Questions 40-50**

Rent control is the system whereby the local government tells building owners how much they can charge their tenants in rent. In the United States, rent controls date back to at least World War II.

In 1943 the federal government imposed rent controls to help solve the problem of housing shortages during wartime. The federal program ended after the war, but in some locations, including New York City, controls continued. Under New York's controls, a landlord generally cannot raise rents on apartments as long as the tenants continue to renew their leases. In places such as Santa Monica, California, rent controls are more recent. They were spurred by the inflation of the 1970's, which, combined with California's rapid population growth, pushed housing prices, as well as rents, to record levels. In 1979 Santa Monica's municipal government ordered landlords to roll back their rents to the levels charged in 1978. Future rents could only go up by two-thirds as much as any increase in the overall price level.

In any housing market, rental prices perform three functions: (1) promoting the efficient maintenance of existing housing and stimulating the construction of new housing, (2) allocating existing scarce housing among competing claimants, and (3) rationing use of existing housing by potential renters.

One result of rent control is a decrease in the construction of new rental units. Rent controls have artificially depressed the most important long-term determinant of profitability - rents. Consider some examples. In a recent year in Dallas, Texas, with a 16 percent rental vacancy rate but no rent control laws, 11,000 new housing units were built. In the same year, in San Francisco, California, only 2,000 units were built. The major difference? San Francisco has only a 1.6 percent vacancy rate but stringent rent control laws. In New York City, except for government-subsidized construction, the only rental units being built are luxury units, which are exempt from controls. In Santa Monica, California, new apartments are not being constructed. New office rental space and commercial developments are, however. They are exempt from rent controls.

40. What does the passage mainly discuss?

(A) The construction of apartments in the United States.

(B) Causes and effects of rent control

(C) The fluctuations of rental prices

(D) The shortage of affordable housing in the United States.

41. The word "They" in line 9 refers to

(A) the tenants

(B) their leases

- (C) places  
(D) rent controls.
42. Which of the following was NOT a reason for the introduction of rent controls in Santa Monica, California?
- (A) Rapid population growth  
(B) Inflation  
(C) Economic conditions during wartime  
(D) Record-high housing prices
43. The phrase "roll back" in lines 11-12 is closest in meaning to
- (A) credit  
(B) measure  
(C) vary  
(D) reduce
44. The word "stimulating" in line 15 is closest in meaning to
- (A) experimenting with  
(B) identifying  
(C) estimating  
(D) encouraging
45. It can be inferred that the purpose of rent control is to
- (A) protect tenants  
(B) promote construction  
(C) increase vacancy rates  
(D) decrease sales of rental units
46. The word "depressed" in line 19 is closest in meaning to
- (A) saddened  
(B) created  
(C) lowered  
(D) defeated
47. The information in the last paragraph supports which of the following statements?
- (A) San Francisco has eliminated its rent control laws.  
(B) Rent control leads to a reduction in the construction of housing units  
(C) Luxury apartments are rarely built when there is rent control  
(D) There is a growing need for government-subsidized housing.
48. According to the passage, which of the following cities does NOT currently have rent controls?
- (A) Santa Monica  
(B) Dallas  
(C) San Francisco  
(D) New York City
49. The word "stringent" in line 23 is closest in meaning to
- (A) straightforward  
(B) strict  
(C) expanded  
(D) efficient
50. According to the passage, which of the following is NOT exempt from rent control?

- (A) Luxury apartments
- (B) Commercial development
- (C) Moderately priced apartments
- (D) Office space

## 1997-05

### Question 1-8

With Robert Laurent and William Zorach, direct carving enters into the story of modern sculpture in the United States. Direct carving - in which the sculptors themselves carve stone or wood with mallet and chisel - must be recognized as something more than just a technique. Implicit in it is an aesthetic principle as well that the medium has certain qualities of beauty and expressiveness with which sculptors must bring their own aesthetic sensibilities into harmony. For example, sometimes the shape or veining in a piece of stone or wood suggests, perhaps even dictates, not only the ultimate form, but even the subject matter.

The technique of direct carving was a break with the nineteenth-century tradition in which the making of a clay model was considered the creative act and the work was then turned over to studio assistants to be cast in plaster or bronze or carved in marble. Neoclassical sculptors seldom held a mallet or chisel in their own hands, readily conceding that the assistants they employed were far better than they were at carving the finished marble.

With the turn-of-the-century Crafts movement and the discovery of nontraditional sources of inspiration, such as wooden African figures and masks, there arose a new urge for hands-on, personal execution of art and an interaction with the medium. Even as early as the 1880's and 1890's, nonconformist European artists were attempting direct carving. By the second decade of the twentieth century, Americans - Laurent and Zorach most notably - had adopted it as their primary means of working.

Born in France, Robert Laurent(1890-1970) was a prodigy who received his education in the United States. In 1905 he was sent to Paris as an apprentice to an art dealer, and in the years that followed he witnessed the birth of Cubism, discovered primitive art, and learned the techniques of woodcarving from a frame maker.

Back in New York City by 1910, Laurent began carving pieces such as *The Priestess*, which reveals his fascination with African, pre-Columbian, and South Pacific art. Taking a walnut plank, the sculptor carved the expressive, stylized design. It is one of the earliest examples of direct carving in American sculpture. The plank's form dictated the rigidly frontal view and the low relief. Even its irregular shape must have appealed to Laurent as a break with a long-standing tradition that required a sculptor to work within a perfect rectangle or square.

1. The word "medium" in line 5 could be used to refer to
- (A) stone or wood
  - (B) mallet and chisel
  - (C) technique

- (D) principle
2. What is one of the fundamental principles of direct carving?
- (A) A sculptor must work with talented assistants.  
(B) The subject of a sculpture should be derived from classical stories.  
(C) The material is an important element in a sculpture.  
(D) Designing a sculpture is a more creative activity than carving it.
3. The word "dictates" in line 8 is closest in meaning to
- (A) reads aloud  
(B) determines  
(C) includes  
(D) records
4. How does direct carving differ from the nineteenth-century tradition of sculpture?
- (A) Sculptors are personally involved in the carving of a piece.  
(B) Sculptors find their inspiration in neoclassical sources.  
(C) Sculptors have replaced the mallet and chisel with other tools.  
(D) Sculptors receive more formal training.
5. The word "witnessed" in line 23 is closest in meaning to
- (A) influenced  
(B) studied  
(C) validated  
(D) observed
6. Where did Robert Laurent learn to carve?
- (A) New York  
(B) Africa  
(C) The South Pacific  
(D) Paris.
7. The phrase "a break with" in line 30 is closest in meaning to
- (A) a destruction of  
(B) a departure from  
(C) a collapse of  
(D) a solution to
8. The piece titled *The Priestess* has all of the following characteristics EXCEPT:
- (A) The design is stylized.  
(B) It is made of marble.  
(C) The carving is not deep.  
(D) It depicts the front of a person.

**Question 9-19**

Birds that feed in flocks commonly retire together into roosts. The reasons for roosting communally are not always obvious, but there are some likely benefits. In winter especially, it is important for birds to keep warm at night and conserve precious food reserves. One way to do this is to find a sheltered roost. Solitary roosters shelter in dense vegetation or enter a cavity - horned larks dig holes in the ground and ptarmigan burrow into snow banks - but the effect of sheltering is magnified by

several birds huddling together in the roosts, as wrens, swifts, brown creepers, bluebirds, and anis do. Body contact reduces the surface area exposed to the cold air, so the birds keep each other warm. Two kinglets huddling together were found to reduce their heat losses by a quarter and three together saved a third of their heat.

The second possible benefit of communal roosts is that they act as "information centers." During the day, parties of birds will have spread out to forage over a very large area. When they return in the evening some will have fed well, but others may have found little to eat. Some investigators have observed that when the birds set out again next morning, those birds that did not feed well on the previous day appear to follow those that did. The behavior of common and lesser kestrels may illustrate different feeding behaviors of similar birds with different roosting habits. The common kestrel hunts vertebrate animals in a small, familiar hunting ground, whereas the very similar lesser kestrel feeds on insects over a large area. The common kestrel roosts and hunts alone, but the lesser kestrel roosts and hunts in flocks, possibly so one bird can learn from others where to find insect swarms.

Finally, there is safety in numbers at communal roosts since there will always be a few birds awake at any given moment to give the alarm. But this increased protection is partially counteracted by the fact that mass roosts attract predators and are especially vulnerable if they are on the ground. Even those in trees can be attacked by birds of prey. The birds on the edge are at greatest risk since predators find it easier to catch small birds perching at the margins of the roost.

9. What does the passage mainly discuss?

- (A) How birds find and store food.
- (B) How birds maintain body heat in the winter.
- (C) Why birds need to establish territory.
- (D) Why some species of birds nest together.

10. The word "conserve" in line 3 is closest in meaning to

- (A) retain
- (B) watch
- (C) locate
- (D) share

11. Ptarmigan keep warm in the winter by

- (A) huddling together on the ground with other birds.
- (B) Building nests in trees.
- (C) Burrowing into dense patches of vegetation
- (D) Digging tunnels into the snow.

12. The word "magnified" in line 6 is closest in meaning to

- (A) caused
- (B) modified
- (C) intensified
- (D) combined

13. The author mentions kinglets in line 9 as an example of birds that

- (A) protect themselves by nesting in holes.

- (B) Nest with other species of birds  
(C) Nest together for warmth  
(D) Usually feed and nest in pairs.
14. The word "forage" in line 12 is closest in meaning to  
(A) fly  
(B) assemble  
(C) feed  
(D) rest
15. Which of the following statements about lesser and common kestrels is true?  
(A) The lesser kestrel and the common kestrel have similar diets.  
(B) The lesser kestrel feeds sociably but the common kestrel does not.  
(C) The common kestrel nests in larger flocks than does the lesser kestrel.  
(D) The common kestrel nests in trees, the lesser kestrel nests on the ground.
16. The word "counteracted" in line 24 is closest in meaning to  
(A) suggested  
(B) negated  
(C) measured  
(D) shielded
17. Which of the following is NOT mentioned in the passage as an advantage derived by birds that huddle together while sleeping?  
(A) Some members of the flock warn others of impending dangers.  
(B) Staying together provides a greater amount of heat for the whole flock.  
(C) Some birds in the flock function as information centers for others who are looking for food.  
(D) Several members of the flock care for the young.
18. Which of the following is a disadvantage of communal roosts that is mentioned in the passage?  
(A) Diseases easily spread among the birds.  
(B) Groups are more attractive to predators than individual birds.  
(C) Food supplies are quickly depleted  
(D) Some birds in the group will attack the others.
19. The word "they" in line 25 refers to  
(A) a few birds  
(B) mass roosts  
(C) predators  
(D) trees

**Question 20-30**

Before the mid-nineteenth century, people in the United States ate most foods only in season. Drying, smoking, and salting could preserve meat for a short time, but the availability of fresh meat, like that of fresh milk, was very limited; there was no way to prevent spoilage. But in 1810 a French inventor named Nicolas Appert developed the cooking-and-sealing process of canning. And in the 1850's an American named Gail Borden developed a means of condensing and preserving milk. Canned goods and condensed milk became more common during the 1860's, but supplies remained low because cans had to be made by hand. By 1880, however, inventors had fashioned



stamping and soldering machines that mass-produced cans from tinfoil. Suddenly all kinds of food could be preserved and bought at all times of the year.

Other trends and inventions had also helped make it possible for Americans to vary their daily diets. Growing urban populations created demand that encouraged fruit and vegetable farmers to raise more produce. Railroad refrigerator cars enabled growers and meat packers to ship perishables great distances and to preserve them for longer periods. Thus, by the 1890's, northern city dwellers could enjoy southern and western strawberries, grapes, and tomatoes, previously available for a month at most, for up to six months of the year. In addition, increased use of iceboxes enabled families to store perishables. An easy means of producing ice commercially had been invented in the 1870's, and by 1900 the nation had more than two thousand commercial ice plants, most of which made home deliveries. The icebox became a fixture in most homes and remained so until the mechanized refrigerator replaced it in the 1920's and 1930's.

Almost everyone now had a more diversified diet. Some people continued to eat mainly foods that were heavy in starches or carbohydrates, and not everyone could afford meat. Nevertheless, many families could take advantage of previously unavailable fruits, vegetables, and dairy products to achieve more varied fare.

20. What does the passage mainly discuss?

- (A) Causes of food spoilage.
- (B) Commercial production of ice
- (C) Inventions that led to changes in the American diet.
- (D) Population movements in the nineteenth century.

21. The phrase "in season" in line 2 refers to

- (A) a kind of weather
- (B) a particular time of year
- (C) an official schedule
- (D) a method of flavoring food.

22. The word "prevent" in line 4 is closest in meaning to

- (A) estimate
- (B) avoid
- (C) correct
- (D) confine

23. During the 1860's, canned food products were

- (A) unavailable in rural areas
- (B) shipped in refrigerator cars
- (C) available in limited quantities.
- (D) A staple part of the American diet.

24. It can be inferred that railroad refrigerator cars came into use

- (A) before 1860
- (B) before 1890
- (C) after 1900
- (D) after 1920

25. The word "them" in line 14 refers to

- (A) refrigerator cars
  - (B) perishables
  - (C) growers
  - (D) distances
26. The word "fixture" in line 20 is closest in meaning to
- (A) luxury item
  - (B) substance
  - (C) commonplace object
  - (D) mechanical device
27. The author implies that in the 1920's and 1930's home deliveries of ice
- (A) decreased in number
  - (B) were on an irregular schedule
  - (C) increased in cost
  - (D) occurred only in the summer.
28. The word "Nevertheless" in line 24 is closest in meaning to
- (A) therefore
  - (B) because
  - (C) occasionally
  - (D) however
29. Which of the following types of food preservation was NOT mentioned in the passage?
- (A) Drying
  - (B) Canning
  - (C) Cold storage
  - (D) Chemical additives.
30. Which of the following statements is supported by the passage?
- (A) Tin cans and iceboxes helped to make many foods more widely available.
  - (B) Commercial ice factories were developed by railroad owners
  - (C) Most farmers in the United States raised only fruits and vegetables.
  - (D) People who lived in cities demanded home delivery of foods.

**Question 31-38**

The ability of falling cats to right themselves in midair and land on their feet has been a source of wonder for ages. Biologists long regarded it as an example of adaptation by natural selection, but for physicists it bordered on the miraculous. Newton's laws of motion assume that the total amount of spin of a body cannot change unless an external torque speeds it up or slows it down. If a cat has no spin when it is released and experiences no external torque, it ought not to be able to twist around as it falls.

In the speed of its execution, the righting of a tumbling cat resembles a magician's trick. The gyrations of the cat in midair are too fast for the human eye to follow, so the process is obscured. Either the eye must be speeded up, or the cat's fall slowed down for the phenomenon to be observed. A century ago the former was accomplished by means of high-speed photography using equipment now available in any pharmacy. But in the nineteenth century the capture on film of a falling cat constituted a scientific

experiment.

The experiment was described in a paper presented to the Paris Academy in 1894. Two sequences of twenty photographs each, one from the side and one from behind, show a white cat in the act of righting itself. Grainy and quaint though they are, the photos show that the cat was dropped upside down, with no initial spin, and still landed on its feet. Careful analysis of the photos reveals the secret: As the cat rotates as the front of its body clockwise, the rear and tail twist counterclockwise, so that the total spin remains zero, in perfect accord with Newton's laws. Halfway down, the cat pulls in its legs before reversing its twist and then extends them again, with the desired end result. The explanation was that while no body can acquire spin without torque, a flexible one can readily change its orientation, or phase. Cats know this instinctively, but scientists could not be sure how it happened until they increased the speed of their perceptions a thousandfold.

31. What does the passage mainly discuss?

- (A) The explanation of an interesting phenomenon
- (B) Miracles in modern science
- (C) Procedures in scientific investigation
- (D) The differences between biology and physics.

32. The word "process" in line 10 refers to

- (A) the righting of a tumbling cat
- (B) the cat's fall slowed down
- (C) high-speed photography
- (D) a scientific experiment

33. Why are the photographs mentioned in line 16 referred to as an "experiment"?

- (A) The photographs were not very clear.
- (B) The purpose of the photographs was to explain the process.
- (C) The photographer used inferior equipment
- (D) The photographer thought the cat might be injured.

34. Which of the following can be inferred about high-speed photography in the late 1800's?

- (A) It was a relatively new technology.
- (B) The necessary equipment was easy to obtain.
- (C) The resulting photographs are difficult to interpret.
- (D) It was not fast enough to provide new information.

35. The word "rotates" in line 19 is closest in meaning to

- (A) drops
- (B) turns
- (C) controls
- (D) touches

36. According to the passage, a cat is able to right itself in midair because it is

- (A) frightened
- (B) small
- (C) intelligent
- (D) flexible

37. The word "readily" in line 24 is closest in meaning to
- (A) only
  - (B) easily
  - (C) slowly
  - (D) certainly
38. How did scientists increase "the speed of their perceptions a thousandfold" (lines 25-26)?
- (A) By analyzing photographs
  - (B) By observing a white cat in a dark room
  - (C) By dropping a cat from a greater height.
  - (D) By studying Newton's laws of motion.

**Question 39-50**

The changing profile of a city in the United States is apparent in the shifting definitions used by the United States Bureau of the Census. In 1870 the census officially distinguished the nation's "urban" from its "rural" population for the first time. "Urban population" was defined as persons living in towns of 8,000 inhabitants or more. But after 1900 it meant persons living in incorporated places having 2,500 or more inhabitants.

Then, in 1950 the Census Bureau radically changed its definition of "urban" to take account of the new vagueness of city boundaries. In addition to persons living in incorporated units of 2,500 or more, the census now included those who lived in unincorporated units of that size, and also all persons living in the densely settled urban fringe, including both incorporated and unincorporated areas located around cities of 50,000 inhabitants or more. Each such unit, conceived as an integrated economic and social unit with a large population nucleus, was named a Standard Metropolitan Statistical Area (SMSA).

Each SMSA would contain at least (a) one central city with 50,000 inhabitants or more or (b) two cities having shared boundaries and constituting, for general economic and social purposes, a single community with a combined population of at least 50,000, the smaller of which must have a population of at least 15,000. Such an area included the county in which the central city is located, and adjacent counties that are found to be metropolitan in character and economically and socially integrated with the country of the central city. By 1970, about two-thirds of the population of the United States was living in these urbanized areas, and of that figure more than half were living outside the central cities.

While the Census Bureau and the United States government used the term SMSA (by 1969 there were 233 of them), social scientists were also using new terms to describe the elusive, vaguely defined areas reaching out from what used to be simple "town" and "cities". A host of terms came into use: "metropolitan regions", "polynucleated population groups", "conurbations", "metropolitan clusters", "megalopolises", and so on.

39. What does the passage mainly discuss?
- (A) How cities in the United States began and developed

- (B) Solutions to overcrowding in cities
  - (C) The changing definition of an urban area
  - (D) How the United States Census Bureau conducts a census
40. According to the passage, the population of the United States was first classified as rural or urban in
- (A) 1870
  - (B) 1900
  - (C) 1950
  - (D) 1970
41. The word "distinguished" in line 3 is closest in meaning to
- (A) differentiated
  - (B) removed
  - (C) honored
  - (D) protected
42. Prior to 1900, how many inhabitants would a town have to have before being defined as urban?
- (A) 2,500
  - (B) 8,000
  - (C) 15,000
  - (D) 50,000
43. According to the passage, why did the Census Bureau revise the definition of urban in 1950?
- (A) City borders had become less distinct.
  - (B) Cities had undergone radical social change
  - (C) Elected officials could not agree on an acceptable definition.
  - (D) New businesses had relocated to larger cities.
44. The word "those" in line 9 refers to
- (A) boundaries
  - (B) persons
  - (C) units
  - (D) areas
45. The word "constituting" in line 16 is closest in meaning to
- (A) located near
  - (B) determined by
  - (C) calling for
  - (D) marking up
46. The word "which" in line 18 refers to a smaller
- (A) population
  - (B) city
  - (C) character
  - (D) figure
47. Which of the following is NOT true of an SMSA?
- (A) It has a population of at least 50,000
  - (B) It can include a city's outlying regions
  - (C) It can include unincorporated regions
  - (D) It consists of at least two cities.

48. By 1970, what proportion of the population in the United States did NOT live in an SMSA?
- (A) 3/4
  - (B) 2/3
  - (C) 1/2
  - (D) 1/3
49. The Census Bureau first used the term "SMSA" in
- (A) 1900
  - (B) 1950
  - (C) 1969
  - (D) 1970
50. Where in the passage does the author mention names used by social scientists for an urban area?
- (A) Lines 4-5
  - (B) Lines 7-8
  - (C) Lines 21-23
  - (D) Lines 27-29

## 1997-08

### Question 1-9

In the 1500's when the Spanish moved into what later was to become the southwestern United States, they encountered the ancestors of the modern-day Pueblo, Hopi, and Zuni peoples. These ancestors, known variously as the Basket Makers, the Anasazi, or the Ancient Ones, had lived in the area for at least 2,000 years. They were an advanced agricultural people who used irrigation to help grow their crops.

The Anasazi lived in houses constructed of adobe and wood. Anasazi houses were originally built in pits and were entered from the roof. But around the year 700 A.D., the Anasazi began to build their homes above ground and join them together into rambling multistoried complexes, which the Spanish called pueblos or villages. Separate subterranean rooms in these pueblos --- known as kivas or chapels --- were set aside for religious ceremonies. Each kiva had a fire pit and a hole that was believed to lead to the underworld. The largest pueblos had five stories and more than 800 rooms.

The Anasazi family was matrilinear, that is, descent was traced through the female. The sacred objects of the family were under the control of the oldest female, but the ritual ceremonies were conducted by her brother or son. Women owned the rooms in the pueblo and the crops, once they were harvested. While still growing, crops belonged to the man who, in contrast to most other Native American groups, planted them. The women made baskets and pottery, the men wove textile and crafted turquoise jewelry.

Each village had two chiefs. The village chief dealt with land disputes and religious affairs. The war chief led the men in fighting during occasional conflicts that broke out with neighboring villages and directed the men in community building projects. The cohesive political and social organization of the Anasazi made it almost impossible for other groups to conquer them.

1. The Anasazi people were considered "agriculturally advanced" because of the way they
  - (A) stored their crops
  - (B) fertilized their fields.
  - (C) watered their crops.
  - (D) planted their fields.
2. The word "pits" in line 7 is closest in meaning to
  - (A) stages
  - (B) scars
  - (C) seeds
  - (D) holes.
3. The word "stories" in line 12 is closest in meaning to
  - (A) articles
  - (B) tales
  - (C) levels
  - (D) rumors
4. Who would have been most likely to control the sacred objects of an Anasazi family?
  - (A) A twenty-year-old man
  - (B) A twenty-year-old woman
  - (C) A forty-year-old man
  - (D) A forty-year-old woman
5. The word "they" in line 16 refers to
  - (A) women
  - (B) crops
  - (C) rooms
  - (D) pueblos
6. The word "disputes" in line 20 is closest in meaning to
  - (A) discussions
  - (B) arguments
  - (C) developments
  - (D) purchases
7. Which of the following activities was NOT done by Anasazi men?
  - (A) Making baskets
  - (B) Planting crops
  - (C) Building homes
  - (D) Crafting jewelry.
8. According to the passage, what made it almost impossible for other groups to conquer the Anasazi?
  - (A) The political and social organization of the Anasazi
  - (B) The military tactics employed by the Anasazi
  - (C) The Anasazi's agricultural technology.
  - (D) The natural barriers surrounding Anasazi willages.
9. The passage supports which of the following generalizations?
  - (A) The presence of the Spanish threatened Anasazi society.























































































































































































































































































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France produced a number of outstanding exponents of the Art Nouveau style: among the most celebrated was Emile Gallé(1846-1901). In the United States, Louis Comfort Tiffany(1848-1933)was the most noted exponent of this style, producing a great variety of glass forms and surfaces, which were widely copied in their time and are highly prized today. Tiffany was a brilliant designer, successfully combining ancient Egyptian.

The Art Nouveau style was a major force in the decorative arts from 1895 until 1915, although its influence continued throughout the mid-1920's. It was eventually to be overtaken by a new school of thought known as Functionalism that had present since the turn of the century. At first restricted to a small avant-garde group of architects and designers. Functionalism emerged as the dominant influence upon designers alter the First World War. The basic tenet of the movement - that function should determine form - was not a new concept. Soon a distinct aesthetic code evolved: form should be simple, surfaces plain, and any ornament should be based on geometric relationships. This new design concept, coupled with the sharp postwar reactions to the style and conventions of the preceding decades, created an entirely new public taste which caused Art Nouveau types of glass to fall out of favor. The new taste demanded dramatic effects of contrast stark outline, and complex textural surfaces.

20. What does paragraph 1 mainly discuss?

- (A) Design elements in the Art Nouveau style
- (B) The popularity of the Art Nouveau style
- (C) Production techniques for art glass
- (D) Color combinations typical of the Art Nouveau style

21. The word "one" in line 4 refers to

- (A) century
- (B) development
- (C) style
- (D) coloration

22. Paragraph 1 mentions that Art Nouveau glass was sometimes similar to which aspect of ancient burial glass?

- (A) The distortion of the glass
- (B) The appearance of the glass
- (C) The shapes of the glass objects
- (D) The size of the glass objects

23. What is the main purpose of paragraph 2 ?

- (A) To compare different Art Nouveau styles
- (B) To give examples of famous Art Nouveau artists
- (C) To explain why Art Nouveau glass was so popular in the United States
- (D) To show the impact Art Nouveau had on other cultures around the world

24. The word "prized" in line14 is closest in meaning to

- (A) valued
- (B) universal
- (C) uncommon
- (D) preserved



































