

SECTION 1

Time-30minutes

38 Questions

1. There is hardly a generalization that can be made about people's social behavior and the values informing it that cannot be -----from one or another point of view, or even -----as simplistic or vapid.
- (A) accepted...praised
(B) intuited...exposed
(C) harangued...retracted
(D) defended...glorified
(E) challenged...dismissed
2. Although any destruction of vitamins caused by food irradiation could be ----- the use of diet supplements, there may be no protection from carcinogens that some fear might be introduced into foods by the process.
- (A) counterbalanced by
(B) attributed to
(C) inferred from
(D) augmented with
(E) stimulated by
3. Though he refused any responsibility for the failure of the negotiations, Stevenson had no right to -----himself: it was his -----that had caused the debacle.
- (A) blame... skill
(B) congratulate...modesty
(C) berate...largesse
(D) accuse...obstinacy
(E) absolve...acrimony
4. The prevailing union of passionate interest in detailed facts with equal devotion to abstract -----is a hallmark of our present society; in the past this union appeared, at best, -----and as if by chance.
- (A) data...extensively
(B) philosophy...cyclically
(C) generalization...sporadically
(D) evaluation...opportunistically
(E) intuition...selectively
5. A century ago the physician's word was ----- to doubt it was considered almost sacrilegious
- (A) inevitable
(B) intractable
(C) incontrovertible
(D) objective
(E) respectable
6. So much of modern fiction in the United States is autobiographical, and so much of the autobiography fictionalized, that the -----sometimes seem largely-----.
- (A) authors...ignored
(B) needs...unrecognized
(C) genres...interchangeable
(D) intentions...misunderstood
(E) misapprehensions...uncorrected
7. Robin's words were not without emotion: they retained their level tone only by a careful ----- imminent extremes.
- (A) equipoise between
(B) embrace of
(C) oscillation between
(D) limitation to
(E) Subjection to
8. OIL : LUBRICATE::
- (A) preservative : desiccate
(B) wine : ferment
(C) honey : pollinate
(D) antiseptic : disinfect
(E) soil : fertilize
9. CONSTRUCT : REMODEL::
- (A) exhibit : perform
(B) compose : edit
(C) demolish : repair
(D) quantify : estimate
(E) predict : assess
10. SPOKE : HUB::
- (A) radius : center
(B) parabola : equation
(C) line : point

- (D) vector : direction
(E) slope : change
11. ILLUSTRATE : PICTURES::
- (A) particularize : details
(B) abridge : texts
(C) parse : sentences
(D) regularize : inconsistencies
(E) economize : words
12. PANTRY : FOOD::
- (A) museum : replicas
(B) ship : cargo
(C) office : business
(D) armory : weapons
(E) warehouse : storage
13. MIRTH : LAUGHTER::
- (A) uncertainty : nod
(B) approval : applause
(C) danger : alarm
(D) labor : sweat
(E) love : respect
14. ABRADED : FRICTION::
- (A) refined : combustion
(B) attenuated : coagulation
(C) diluted : immersion
(D) strengthened : compression
(E) desiccated : dehydration
15. PARSIMONY : MISER::
- (A) temerity : despot
(B) belligerence : traitor
(C) remorse : delinquent
(D) equanimity : guardian
(E) rebelliousness : insurgent
16. NTPICK : CRITICIZE::
- (A) mock : imitate
(B) complain : argue
(C) interrogate : probe
(D) fret : vex
(E) cavil : object

Directions: Each passage in this group is followed by questions based on its content. After reading a passage, choose the best answer to each question. Answer all questions following a passage on the basis of what is stated or implied in that passage.

(This passage is from a book published in 1960.)

When we consider great painters of the past, the study of art and the study of illusion cannot always be separated. By illusion I mean those contrivances of *line* color, line, shape, and so forth that lead us to see (5) marks on a flat surface as depicting three-dimensional objects in space. I must emphasize that I am not making a plea, disguised or otherwise, for the exercise of illusionist tricks in painting today, although I am, in fact, rather critical of certain theories of non- (10) representational art. But to argue over these theories would be to miss the point. That the discoveries and effects of representation that were the pride of earlier artists have become trivial today I would not deny for a moment. Yet I believe that we are in real danger of (15) losing contact with past masters if we accept the fashionable doctrine that such matters never had anything to do with art. The very reason why the representation of nature can now be considered something commonplace should be of the greatest (20) interest to art historians. Never before has there been an age when the visual image was so cheap in every sense of the word. We are surrounded and assailed by posters and advertisements, comics and magazine illustrations. We see aspects of reality represented (25) on television, postage stamps, and food packages. Painting is taught in school and practiced as a pastime, and many modest amateurs have mastered tricks that would have looked like sheer magic to the fourteenth-century painter Giotto. Even the crude (30) colored renderings on a cereal box might have made Giotto's contemporaries gasp. Perhaps there are people who conclude from this that the cereal box is superior to a Giotto; I do not. But I think- that the victory and vulgarization of representational skills (35) create a problem for both art historians and critics.

In this connection it is instructive to remember the Greek saying that to marvel is the beginning of knowledge and if we cease to marvel we may be in

- danger of ceasing to know. I believe we must restore
 (40) our sense of wonder at the capacity to conjure up by
 forms, lines, shades, or colors those mysterious
 phantoms of visual reality we call "pictures." Even
 comics and advertisements, rightly viewed, provide
 food for thought. Just as the study of poetry remains
 (45) incomplete without an awareness of the language of
 prose, so, I believe, the study of art will be increasingly
 supplemented by inquiry into the "linguistics" of the
 visual image. The way the language of art refers to
 the visible world is both so obvious and so myste-
 (50) rious that it is still largely unknown except to artist.
 who use it as we use all language – without needing
 to know its grammar and semantics.
17. The author of the passage explicitly, disagrees with
 which of the following statements'
- (A) In modern society even nonartists can master
 techniques that great artists of the fourteenth
 century did not employ.
- (B) The ability to represent a three-dimensional
 object on a flat surface has nothing to do with
 art.
- (C) In modern society the victory of
 representational skills has created a problem
 for art critics.
- (D) The way that artists are able to represent the
 visible world is an area that needs a great deal
 more study before it can be fully understood.
- (E) Modern painters do not frequently make use of
 illusionist tricks in their work.
18. The author suggests which of the following about
 art historians?
- (A) They do not believe that illusionist tricks have
 become trivial.
- (B) They generally spend little time studying
 contemporary artists.
- (C) They have not given enough consideration to
 how the representation of nature has become
 commonplace.
- (D) They generally tend to argue about theories
 rather than address substantive issues.
- (E) They are less likely than art critics to study
 comics or advertisements.
19. Which of the following best states the author's
 attitude toward comics, as expressed in the
 passage?
- (A) They constitute an innovative art form.
- (B) They can be a worthwhile subject for study.
- (C) They are critically important to an
 understanding of modern art.
- (D) Their -visual structure is more complex than
 that of medieval art.
- (E) They can be understood best if they are
 examined in conjunction with advertisements.
20. The author's statement regarding how artists use
 the language of art (lines 48-52) implies that
- (A) artists are better equipped than are art
 historians to provide detailed evaluations of
 other artists' work
- (B) many artists have an unusually quick, intuitive
 understanding of language
- (C) artists can produce works of art even if they
 cannot analyze their methods of doing so
- (D) artists of the past, such as Giotto, were better
 educated about artistic issues than were artists
 of the author's time
- (E) most artists probably consider the processes
 involved in their work to be closely akin to
 those involved in writing poetry
21. The passage asserts which of the following about
 commercial art?
- (A) There are many examples of commercial art
 whose artistic merit is equal to that of great
 works of art of the past.
- (B) Commercial art is heavily influenced by
 whatever doctrines are fashionable in the
 serious art world of the time.
- (C) The line between commercial art and great art
 lies primarily in how an image is used, not in
 the motivation for its creation.
- (D) The level of technical skill required to produce
 representational imagery in commercial art
 and in other kinds of art cannot be compared.
- (E) The pervasiveness of contemporary
 commercial art has led art historians to
 undervalue representational skills.

22. Which of the following can be inferred from the passage, about the adherents of "certain theories of nonrepresentational art" (lines 9-10) ?

- (A) They consider the use of illusion to be inappropriate in contemporary art.
- (B) They do not agree that marks on a flat surface can ever satisfactorily convey the illusion of three-dimensional space.
- (C) They do not discuss important works of art created in the past.
- (D) They do not think that the representation of nature was ever the primary goal of past painters.
- (E) They concern themselves more with types art such as advertisements and magazine illustrations than with traditional art.

23. It can be inferred from the passage that someone who wanted to analyze the "grammar and semantics" (line 52) of the language of art would most appropriately comment on which of the following?

- (A) The relationship between the drawings in a comic strip and the accompanying text
- (B) The amount of detail that can be included in a tiny illustration on a postage stamp
- (C) The sociological implications of the images chosen to advertise a particular product
- (D) The degree to which various colors used in different versions of the same poster would attract the attention of passersby
- (E) The particular juxtaposition of shapes in an illustration that makes one shape look as though it were behind another

The 1973 Endangered Species Act made into legal policy the concept that endangered species of wildlife are precious as part of a natural ecosystem. The nearly unanimous passage of this act in the United States

- (5) Congress, reflecting the rising national popularity of environmentalism, masked a bitter debate. Affected industries clung to the former wildlife policy of valuing individual species according to their economic usefulness. They fought to minimize the law's impact (10) by limiting definitions of key terms, but they lost on

nearly every issue. The act defined "wildlife" as almost all kinds of animals—from large mammals to invertebrates—and plants. "Taking" wildlife was defined broadly as any action that threatened an

- (15) endangered species; areas vital to a species' survival could be federally protected as "critical habitats" Though these definitions legislated strong environmentalist goals, political compromises made in the enforcement of the act were to determine just what (20) economic interests would be set aside for the sake of ecological stabilization.

24. According to the passage, which of the following does the Endangered Species Act define as a "critical habitat"?

- (A) A natural ecosystem that is threatened by imminent development
- (B) An industrial or urban area in which wildlife species have almost ceased to live among humans
- (C) A natural area that is crucial to the survival of a species and thus eligible for federal protection
- (D) A wilderness area in which the "taking" of wildlife species is permitted rarely and only under strict federal regulation
- (E) A natural environment that is protected under law because its wildlife has a high economic value

25. According to the passage, which of the following is an explanation for the degree of support that the Endangered Species Act received in Congress?

- (A) Concern for the environment had gained increasing national popularity.
- (B) Ecological research had created new economic opportunities dependent on the survival of certain species.
- (C) Congress had long wanted to change the existing wildlife policy.
- (D) The growth of industry had endangered increasing numbers of wildlife species.
- (E) Legislators did not anticipate that the act could be effectively enforced.

26. It can be inferred from the passage that if business interests had won the debate on provisions of the 1973 Endangered Species Act, which of the following would have resulted?

- (A) Environmentalist concepts would not have become widely popular.
- (B) The definitions of key terms of the act would have been more restricted.
- (C) Enforcement of the act would have been more difficult.
- (D) The act would have had stronger support from Congressional leaders.
- (E) The public would have boycotted the industries that had the greatest impact in defining the act.

27. The author refers to the terms "wildlife" (line 11), "taking" (line 13), and "critical habitats" (line 16) most likely in order to

- (A) illustrate the misuse of scientific language and concepts in political processes
- (B) emphasize the importance of selecting precise language in transforming scientific concepts into law
- (C) represent terminology whose definition was crucial in writing environmentalist goals into law
- (D) demonstrate the triviality of the issues debated by industries before Congress passed the Endangered Species Act
- (E) show that broad definitions of key terms in many types of laws resulted in ambiguity and thus left room for disagreement about how the law should be enforced

Since some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

28. SWERVE:

- (A) maintain direction
- (B) resume operation
- (C) slow down
- (D) divert
- (E) orient

29. HUSBAND:

- (A) rearrange
- (B) alarm
- (C) assist
- (D) prize
- (E) squander

30. DEACTIVATE:

- (A) palpate
- (B) alleviate
- (C) inhale
- (D) articulate
- (E) potentiate

31. INTRANSIGENT:

- (A) accustomed to command
- (B) qualified to arbitrate
- (C) open to compromise
- (D) resigned to conflict
- (E) opposed to violence

32. OCCLUDED:

- (A) unvaried
- (B) entire
- (C) functional
- (D) inverted
- (E) unobstructed

33. ASSUAGE:

- (A) intensify
- (B) accuse
- (C) correct
- (D) create
- (E) assert

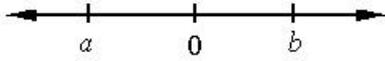
34. QUIXOTIC:

- (A) displaying consistently practical behavior
- (B) considering several points of view
- (C) expressing dissatisfaction
- (D) suggesting uneasiness
- (E) acting decisively

35. PELLUCID:

- (A) stagnant

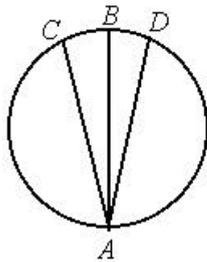
8. S $\frac{1}{2}$



9. a $-b$

$$2 - \frac{1}{x} > 2$$

10. x 1



AB is a diameter of the circle.

11. The length of AB The average (arithmetic mean) of the lengths of AC and AD

$$0 < x < y < 1$$

12. $1 - y$ $y - x$

13. $\frac{1}{\sqrt{5}} \left[\left(\frac{1+\sqrt{5}}{2} \right) - \left(\frac{1-\sqrt{5}}{2} \right) \right]$ 1

$$y = x + \frac{1}{x}$$

$$0 < x < 10$$

14. The value of y 100

At a sale, the cost of each tie was reduced by 20 percent and the cost of each belt was reduced by 30 percent.

15. The percent reduction 25%
on the total cost of
1 tie and 2 belts

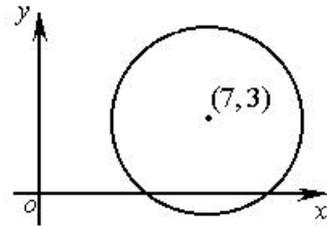
16. $\frac{18}{60}(0.1254) =$

- (A) 0.00522
- (B) 0.03135
- (C) 0.03762
- (D) 0.0418
- (E) 0.0627

17. What percent of the integers between 100 and 999, inclusive, have all three digits the same?

- (A) 1%
- (B) 2%
- (C) 3%
- (D) 4%
- (E) 5%

x y o



18. If $(7, 3)$ is the center of the circle above, then the radius of the circle could be equal to which of the following?

- (A) 2
- (B) 3
- (C) 5
- (D) 7
- (E) 9

19. If revenues \$196,000 from division A of Company X represent 28 percent of the total revenues of Company X for the year, What were the total revenues of Company X for the year?

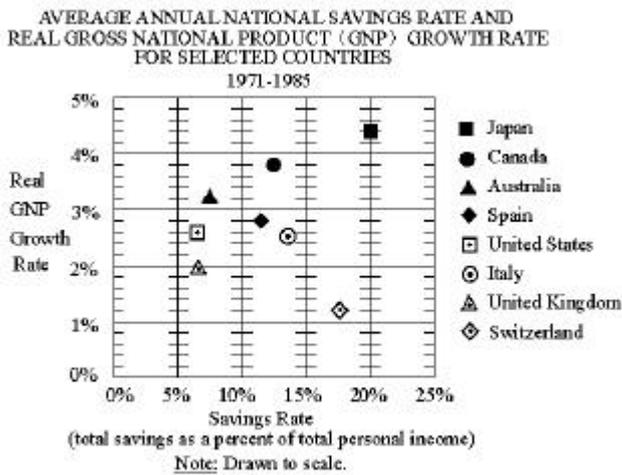
- (A) \$141,100
- (B) \$272,000
- (C) \$413,300
- (D) \$596,100
- (E) \$700,000

20. If $xy \neq 0$, which of the following is equivalent to

$$\left(\frac{x}{y}\right)^3 \left(\frac{2y}{x}\right)^4 ?$$

- (A) $2xy$
- (B) $8xy^2$
- (C) $16x^2y^3$
- (D) $\frac{2y}{x}$
- (E) $\frac{16y}{x}$

Questions 21-25 refer to the following graph.



21. What was the savings rate for the country that had the greatest real GNP growth rate?

- (A) 25%
- (B) 20%
- (C) 18%
- (D) 12.5%
- (E) 4.5%

22. For which country was the ratio of its savings rate to its real GNP growth rate greatest?

- (A) Japan
- (B) Canada
- (C) Australia
- (D) Italy
- (E) Switzerland

23. The savings rate for Canada was approximately how many times that of the United States?

- (A) $1\frac{1}{2}$
- (B) 2
- (C) $2\frac{1}{2}$
- (D) 3
- (E) $3\frac{1}{2}$

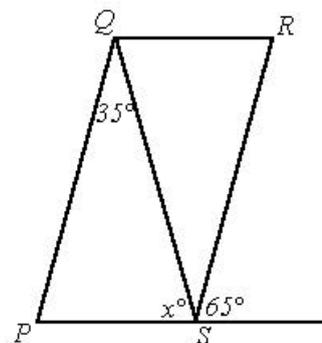
24. For how many of the countries shown was the savings rate more than 5 times the real GNP growth rate?

- (A) Five
- (B) Four
- (C) Three
- (D) Two
- (E) One

25. Which of the following statement can be inferred from the graph?

- . On the average, people in the United States saved about the same amount as people in the United Kingdom.
- . The median of the savings rates for the eight countries was greater than 11 percent
- . Only two of the countries had a higher savings rate than Italy.

- (A) only
- (B) only
- (C) only
- (D) and
- (E) and



26. In the figure above, if $PQRS$ is a parallelogram, then $x =$

- (A) 35
- (B) 65
- (C) 75
- (D) 80
- (E) 100

27. A certain doctor suggests that an individual's daily water intake be $\frac{1}{2}$ ounce per pound of body weight plus 8 ounces for every 25 pounds by which the individual exceeds his or her ideal weight. If this doctor suggests a daily water intake of 136 ounces for a particular 240-pound individual, how many pounds above his or her ideal weight is that individual?

- (A) $12\frac{1}{2}$
- (B) 16
- (C) 30
- (D) 50
- (E) 120

28. A political poll showed that 80 percent of those polled said they would vote for proposition P . Of those who said they would vote for proposition P 70 percent actually voted for P , and of those who did not say they would vote for P , 20 percent actually voted for P . What percent of those polled voted for P ?

- (A) 56%
- (B) 60%
- (C) 64%
- (D) 76%
- (E) 90%

29. If $x \neq 1$ and $x \neq 0$, then $\frac{1 - \frac{1}{x}}{x - 1}$ is equivalent to

- (A) $\frac{1}{x}$
- (B) x

(C) $\frac{x}{1 - x}$

(D) $\frac{x - 1}{x}$

(E) $\frac{(x - 1)^2}{x}$

30. In a group of 80 students, 24 are enrolled in geometry, 40 in biology, and 20 in both. If a student were randomly selected from the 80 students, what is the probability that the student selected would not be enrolled in either course?

- (A) 0.20
- (B) 0.25
- (C) 0.45
- (D) 0.55
- (E) 0.60

SECTION 3

Time – 30 Minutes

25 questions

Questions 1-7

Seven flags will be flown on seven poles, one flag per pole. The poles are arranged in a row and numbered consecutively 1 through 7. Three flags are green, two are white, and two are yellow. The arrangement of flags will conform to the following conditions:

No two green flags can be flown on poles that are next to each other.

None of the green flags can be flown on pole 3.

Neither yellow flag can be flown on pole 5.

- If the two yellow flags are flown on poles that are next to each other and the two white flags are flown on poles that are next to each other, then the flags flown on poles 2 and 6 must be
 - both green
 - green and white, respectively
 - White and green, respectively
 - yellow and green, respectively
 - yellow and white, respectively
- If the white flags are flown on poles 2 and 3, which of the following must be true?
 - A green flag is flown on pole 4.
 - A green flag is flown on pole 6.
 - A green flag is flown on pole 7.
 - A yellow flag is flown on pole 1.
 - A yellow flag is flown on pole 7.
- Which of the following, CANNOT be true?
 - Green flags are flown on poles 1 and 4.
 - White flags are flown on poles 1 and 7.
 - Yellow flags are flown on poles 1 and 7.
 - A green flag is flown on pole 1 and a yellow flag is flown on pole 7.
 - a white flag is flown on pole 1 and a yellow flag is flown on pole 7.
- If a green flag is flown on pole 5, which of the following must be true?
 - a green flag is flown on pole 1.
 - a green flag is flown on pole 2.
 - A green flag is flown on pole 7.
 - a white flag is flown on pole 3.
 - A white flag is flown on pole 4.
- If the yellow flags are flown on poles 1 and 6, which of the following must be true?
 - A green flag is flown on pole 4.
 - A green flag is flown on pole 5.
 - The white flags are flown on poles that are next to each other.
 - A white flag and a yellow flag are flown on poles that are next to each other.
 - Each white flag is flown on a pole that is next to a pole on which a green flag is flown.
- If green flags are flown on poles 2 and 6, which of the following can be true?
 - A green flag is flown on pole 1.
 - A green flag is flown on pole 5.
 - A white flag is flown on pole 3.
 - A white flag is flown on pole 4.
 - A yellow flag is flown on pole 4.
- If the yellow flags are flown on poles 2 and 4, which of the following must be true?
 - The white flags are flown on poles that are next to each other.
 - a green flag is flown on pole that is next to two poles on which white flags are flown.
 - A white flag is flown on a pole that is next to a pole on which a green flag is flown, and also next to a pole on which a yellow flag is flown.
 - Each green flag is flown on a pole that is next to a pole on which a white flag is flown.
 - Each yellow flag is flown on a pole that is next to a pole on which a green flag is flown.
- At the Shadybrook dog kennel, all the adult animals were given a new medication designed to reduce a dog's risk of contracting a certain common infection. Several days after the medication was administered, most of the puppies of these dogs had elevated temperatures. Since raised body temperature is a side effect of this medication, the kennel owner hypothesized that the puppies'
 - a green flag is flown on pole 2.
 - A green flag is flown on pole 7.
 - a white flag is flown on pole 3.
 - A white flag is flown on pole 4.

elevated temperatures resulted from the medication's being passed to them through their mothers' milk.

Which of the following, if true, provides the most support for the kennel owner's hypothesis?

- (A) Some puppies have been given the new medication directly but have not suffered elevated temperatures as a side effect.
- (B) The new medication has been well received by dog breeders as a safe and effective way of preventing the spread of certain common canine infections.
- (C) None of the four puppies in the kennel who had been bottle-fed with formula had elevated temperatures.
- (D) an elevated temperature is a side effect of a number of medications for dogs other than the new medication administered at the kennel.
- (E) Elevated temperatures such as those suffered by most of the puppies in the kennel rarely have serious long-term effects on a puppy's health.

9. Which of the following most logically completes the argument?

Alivia's government has approved funds for an electricity-generation project based on the construction of a pipeline that will carry water from Lake Cylus, in the mountains, to the much smaller Lake Tifele, in a nearby valley. The amount of electricity generated will be insufficient by itself to justify the project's cost, even if the price of imported oil—Alivia's primary source of electricity—increases sharply. Nonetheless, the pipeline project is worth its cost, because —

- (A) the price of oil, once subject to frequent sharp increases, has fallen significantly and is now fairly stable
- (B) the project could restore Lake Tifele, which is currently at risk of drying up and thus of being lost as a source of recreation income for Alivia
- (C) the government of Alivia is currently on excellent terms with the governments of most of the countries from which it purchases oil
- (D) it would cost less to generate electricity by moving water from Lake Cylus to lake Tifele

than to do so by moving water from Lake Cylus to another valley lake

- (E) Alivia officials do not expect that the amount of electricity used in Alivia will increase substantially within the next ten years

10. Amusement rides at permanent fairgrounds are dismantled once a year for safety inspections by independent consultants. Traveling fairs, which relocate each month, can slip past the net of safety inspections and escape independent inspection for several years. Therefore, the rides at traveling fairs are less safe than the rides at permanent fairs. Which of the following, if true about traveling fairs, most seriously weakens the argument?

- (A) Before each relocation, the operators dismantle their rides, observing and repairing potential sources of danger, such as worn ball bearings.
- (B) their managers have less capital to spend on the safety and upkeep of the rides than do managers of permanent fairs.
- (C) Since they can travel to new customers, they rely less on keeping up a good reputation for safety.
- (D) While they are traveling, the fairs do not receive notices of equipment recalls sent out by the manufacturers of their rides.
- (E) The operators of the rides often do not pay careful attention to the instructions for operating their rides.

Questions 11-15

A candidate for mayor will visit six institutions—a factory, a hospital, a mall, a police station, a shelter, and a university — on six consecutive days. On each day, the candidate will visit exactly one of the institutions. The visits will conform to the following restrictions:

The visit to the factory must occur on some day before the visit to the university.

The visit to the hospital must occur on the second day after the visit to the university.

Visits to exactly two of the institutions must occur between the visit to the police station and the visit to the shelter, whether the visit to the police station

- occurs before or after the visit to the shelter.
11. Which of the following is an acceptable order in which the institutions can be visited?
- (A) Factory, shelter, university, hospital, police station, mall
 (B) Factory, university, shelter, hospital, police station, mall
 (C) Shelter, factory, university, mall, police station, hospital
 (D) Shelter, factory, university, police station, hospital, mall.
 (E) University, shelter, hospital, factory, police station, mall.
12. If the university is visited on the second day, then the mall must be visited on the
- (A) first day
 (B) third day
 (C) fourth day
 (D) fifth day
 (E) sixth day
13. If the factory is not visited on the day immediately preceding the visit to the university, then the police station can be visited on the
- (A) first day
 (B) second day
 (C) third day
 (D) fourth day
 (E) sixth day
14. If the mall is visited either on the day immediately preceding or on the day immediately following the visit to the shelter, which of the following must be true?
- (A) The factory is visited on the day immediately preceding the visit to the police station.
 (B) The factory is visited on the day immediately preceding the visit to the shelter.
 (C) The factory is visited on the day immediately preceding the visit to the university.
 (D) The hospital is visited on the day immediately preceding the visit to the shelter.
 (E) The university is visited on the day
- immediately preceding the visit to the police station.
15. If the hospital is visited on the day immediately preceding the visit to the mall, which of the following can be true?
- (A) The factory is visited on the second day.
 (B) The factory is visited on the third day.
 (C) The mall is visited on the third day.
 (D) the mall is visited on the fourth day.
 (E) The university is visited on the fourth day.
- Questions 16-22
- The organizer of a publishing conference is scheduling workshops to be given on three days-Wednesday, Thursday, and Friday. On each day, three day-long workshops-Graphics, Marketing, and Research-will be given in three rooms-room 1 through room 3-subject to the following constraints:
- On each day, there is one workshop given per room. Over the course of the three days, each workshop is given in each of the three rooms.
16. Which of the following can be the workshops given in room 1 and room 2 on each of the three days?
- | | <u>Wednesday</u> | <u>Thursday</u> | <u>Friday</u> |
|-----|---------------------------|-----------------------|-----------------------|
| (A) | 1:Graphics
2:Research | Marketing
Graphics | Graphics
Marketing |
| (B) | 1:Graphics
2:Marketing | Research
Marketing | Marketing
Research |
| (C) | 1:Marketing
2:Graphics | Graphics
Research | Research
Marketing |
| (D) | 1:Marketing
2:Research | Research
Marketing | Graphics
Graphics |
| (E) | 1:Research
2:Graphics | Marketing
Research | Research
Marketing |
17. If Graphics is scheduled for room 1 on Wednesday and Marketing is scheduled for room 2 on Thursday, then which of the following must be scheduled for Friday?
- (A) Graphics in room 3
 (B) Marketing in room 1

- (C) Marketing in room 3
(D) Research in room 1
(E) Research in room 2
18. If Graphics is scheduled for room 1 on Wednesday and Marketing is scheduled for room 3 on Friday, then which of the following must be true?
- (A) Graphics is scheduled for room 2 on Thursday.
(B) Marketing is scheduled for room 2 on Thursday.
(C) Marketing is scheduled for room 3 on Wednesday.
(D) Research is scheduled for room 2 on Wednesday.
(E) Research is scheduled for room 2 on Thursday.
19. If Marketing is scheduled for room 3 on Thursday and Research is scheduled for room 2 on Friday, then which of the following must be true?
- (A) Graphics is scheduled for room 2 on Wednesday.
(B) Graphics is scheduled for room 1 on Thursday.
(C) Marketing is scheduled for room 1 on Wednesday.
(D) Marketing is scheduled for room 2 on Wednesday.
(E) Research is scheduled for room 2 on Thursday.
20. If Research is scheduled for room 1 on Wednesday and Graphics is scheduled for room 1 on Thursday, then which of the following can be true?
- (A) Graphics is scheduled for room 2 on Wednesday and Marketing is scheduled for room 3 on Thursday.
(B) Graphics is scheduled for room 2 on Thursday and room 1 on Friday.
(C) Marketing is scheduled for room 3 on Thursday and room 2 on Friday.
(D) Research is scheduled for room 3 on Thursday and Marketing is scheduled for room 1 on Friday.
(E) Research is scheduled for room 3 on Thursday and Marketing is scheduled for room 2 on Friday.
21. If Marketing is to be scheduled for room 1 on Wednesday, then the schedule of workshops would be completely determined if which of the following were true?
- (A) Graphics is scheduled for room 1 on Thursday.
(B) Graphics is scheduled for room 2 on Thursday.
(C) Graphics is scheduled for room 3 on Wednesday.
(D) Research is scheduled for room 1 on Thursday.
(E) Research is scheduled for room 2 on Wednesday.
22. If on Wednesday Graphics, Marketing, and Research are scheduled for room 1, room 2, and room 3, respectively, then any of the following can be true EXCEPT:
- (A) Graphics is scheduled for room 2 on Thursday and Research is scheduled for room 1 on Friday.
(B) Graphics is scheduled for room 3 on Thursday and Marketing is scheduled for room 3 on Friday.
(C) Marketing is scheduled for room 1 on Thursday and Graphics is scheduled for room 2 on Friday.
(D) Marketing is scheduled for room 3 on Thursday and Research is scheduled for room 2 on Friday.
(E) Research is scheduled for room 2 on Thursday and Marketing is scheduled for room 3 on Friday.
23. When cut, the synthetic material fiberglass, like asbestos, releases microscopic fibers into the air. It is known that people who inhale asbestos fibers suffer impairment of lung functions. A study of 300 factory workers who regularly cut fiberglass showed that their lung capacity is, on average, only 90 percent of that of a comparable group of people who do not cut fiberglass. The statements above, if true, most strongly support which of the following hypotheses?
- (A) People who work with fiberglass are likely also to work with asbestos.

- (B) Fiberglass fibers impair lung function in people who inhale them.
- (C) Fiberglass releases as many fibers into the air when cut as does asbestos.
- (D) Coarse fibers do not impair lung function in people who inhale them.
- (E) If uncut, fiberglass poses no health risk to people who work with it.

24. Politician: Pundits claim that by voting for candidates who promise to cut taxes, people show that they want the government to provide fewer services than it has been providing. By that reasoning, however, people who drink too much alcohol at a party in the evening want a headache the next morning.

Which of the following could replace the statement about people who drink too much without undermining the force of the politician's argument?

- (A) People who spend more money than they can afford want the things they spend that money on.
- (B) People who seek different jobs than they currently have do not want to work at all.
- (C) People who buy new cars want to own cars that are under manufacturer's warranty.
- (D) People who decide to stay in bed a few extra minutes on a workday morning want to have to rush to arrive at work on time.
- (E) People who buy lottery tickets want the economic freedom that winning the lottery would bring.

25. Like most other coastal towns in Norway, the town of Stavanger was quiet and peaceful until the early 1960's, when it became Norway's center for offshore oil exploration. Between then and now, violent crime and vandalism in Stavanger have greatly increased. Stavanger's social problems probably resulted from the oil boom, since violent crime and vandalism have remained low in coastal towns in Norway that have had no oil boom.

Which of the following most accurately describes the method of reasoning employed in the argument?

- (A) Arguing that a circumstance is not a precondition for a phenomenon on the grounds that the phenomenon sometimes occurs where the circumstance is not present
- (B) Arguing that a circumstance is a cause of a phenomenon on the grounds that the phenomenon has not occurred where the circumstance is not present
- (C) Arguing that a particular thing cannot have caused a phenomenon because that thing was not present before the phenomenon occurred
- (D) Attempting to establish a claim by arguing that the denial of the claim is inconsistent with the observed facts
- (E) Attempting to establish that certain circumstances that would have had to occur for a particular explanation to be correct could not have occurred

SECTION 4

Time-30minutes

38 Questions

1. That she seemed to prefer ----- to concentrated effort is undeniable; nevertheless, the impressive quality of her finished paintings suggests that her actual relationship to her art was anything but-----.
- (A) preparation...passionate
(B) artfulness...disengaged
(C) dabbling...superficial
(D) caprice...considered
(E) indecision...lighthearted
2. Because of the excellent preservation of the fossil, anatomical details of early horseshoe crabs were ---- for the first time, enabling experts to ---- the evolution of the horseshoe crab.
- (A) scrutinized...ensure
(B) verified...advance
(C) identified...distort
(D) obscured...illustrate
(E) clarified...reassess
3. The philosopher claimed that a person who must consciously ----- his or her own indifference before helping another is behaving more nobly than one whose basic disposition allows such an act to be performed without-----.
- (A) feign...enthusiasm
(B) censure...comment
(C) embrace...duplicity
(D) suffer...effort
(E) overcome...deliberation
4. The senator's attempt to convince the public that he is not interested in running for a second term is ----- given the extremely----- fund-raising activities of his campaign committee.
- (A) futile...clandestine
(B) sincere...visible
(C) specious...apathetic
(D) disingenuous...public
(E) straightforward... dubious
5. Although a change in management may appear to ----- a shift in a company's fortunes, more often than not its impact is -----
- (A) hinder...measurable
(B) promote...demonstrable
(C) accelerate...profound
(D) betray...fundamental
(E) augur...inconsiderable
6. The skeleton of ----- bird that was recently discovered indicated that this ancient creature ----- today's birds in that, unlike earlier birds and unlike reptilian ancestors, it had not a tooth in its head.
- (A) a primeval... obscured
(B) a unique... preempted
(C) a primitive...anticipated
(D) a contemporary... foreshadowed
(E) an advanced...differed from
7. While many people utilize homeopathic remedies to treat health problems, other people do not -----such alternative treatments, ----- conventional medical treatments instead.
- (A) distrust...employing
(B) embrace...eschewing
(C) reject...envisioning
(D) countenance... relying on
(E) recommend... turning from
8. PROGRAM: CONCERT::
- (A) bibliography : book
(B) menu : entree
(C) questionnaire : poll
(D) platform : campaign
(E) agenda : meeting
9. EMBRACE: AFFECTION::
- (A) prediction : memory
(B) innuendo : secrecy
(C) shrug : indifference
(D) conversation : familiarity
(E) vote : unanimity
10. ENTHUSIASM : MANIA::
- (A) idea : inspiration

- (B) nightmare : hallucination
 (C) failure : disgust
 (D) suspicion : paranoia
 (E) energy : fitness
11. ANONYMOUS : IDENTIFY::
- (A) nonchalant : excite
 (B) repressed : constrain
 (C) misled : trust
 (D) annoying : assist
 (E) unremarkable : please
12. CARTOGRAPHER : MAP::
- (A) astronomer : stars
 (B) carpenter : wood
 (C) lumberjack : saw
 (D) tailor : clothing
 (E) weaver : loom
13. EXEMPLARY : IMITATION::
- (A) venerable : denigration
 (B) novel : duplication
 (C) redoubtable : regard
 (D) challenging : determination
 (E) creditable : verification
14. INSENSITIVE : BOOR::
- (A) spontaneous : extrovert
 (B) mischievous : imp
 (C) conformist : ally
 (D) officious : zealot
 (E) extravagant : miser
15. LABYRINTHINE : SIMPLICITY::
- (A) epic : scope
 (B) digressive : motive
 (C) heretical : sincerity
 (D) austere : design
 (E) jejune : interest
16. EUPHEMISM : OFFENSIVE::
- (A) rhetoric : persuasive
 (B) aphorism : diffuse
 (C) metaphor : descriptive
 (D) repetition : fatiguing
 (E) conciliation : appeasing
- From the 1900's through the 1950's waitresses in the United States developed a form of unionism based on the unions' defending the skills that their occupation included and enforcing standards for the performance of those skills. This "occupational unionism" differed substantially from the "worksite unionism" prevalent among factory workers. Rather than unionizing the workforces of particular employers, waitress locals sought to control their occupation throughout a city.
- (10) Occupational unionism operated through union hiring halls, which provided free placement services to employers who agreed to hire their personnel only through the union. Hiring halls offered union waitresses collective employment security, not individual job security—a basic protection offered by worksite unions. That is, when a waitress lost her job, the local did not intervene with her employer but placed her elsewhere; and when jobs were scarce, the work hours available were distributed fairly among all members rather than being assigned according to seniority.
17. The primary purpose of the passage is to
- (A) analyze a current trend in relation to the past
 (B) discuss a particular solution to a long-standing problem
 (C) analyze changes in the way that certain standards have been enforced
 (D) apply a generalization to an unusual situation
 (E) describe an approach by contrasting it with another approach
18. Which of the following statements best summarizes a distinction mentioned in the passage between waitress unions and factory workers' unions?
- (A) Waitress unions were more successful than factory workers' unions in that they were able to unionize whole cities.
 (B) Waitress unions had an impact on only certain local areas, whereas the impact of factory workers' unions was national.
 (C) Waitress union members held primarily part-time positions, whereas factory workers'

- unions placed their members in full-time jobs.
- (D) Waitress unions emphasized the occupation of workers, whereas factory workers' unions emphasized the worksite at which workers were employed.
- (E) Waitress unions defined the skills of their trade, whereas the skills of factory trades were determined by employers' groups.
19. According to the passage, which of the following was characteristic of the form of union that United States waitresses developed in the first half of the twentieth century?
- (A) The union represented a wide variety of restaurant and hotel service occupations.
- (B) The union defined the skills required of waitresses and disciplined its members to meet certain standards.
- (C) The union billed employers for its members' work and distributed the earnings among all members.
- (D) The union negotiated the enforcement of occupational standards with each employer whose workforce joined the union.
- (E) The union ensured that a worker could not be laid off arbitrarily by an employer.
20. The author of the passage mentions "particular employers' (line 8) primarily in order to
- (A) suggest that occupational unions found some employers difficult to satisfy
- (B) indicate that the occupational unions served some employers but not others
- (C) emphasize the unique focus of occupational unionism
- (D) accentuate the hostility of some employers toward occupational unionism
- (E) point out a weakness of worksite unionism

In prehistoric times brachiopods were one of the most abundant and diverse forms of life on Earth: more than 30,000 species of this clamlike creature
line have been cataloged from fossil records. Today
 (5) brachiopods are not as numerous, and existing species are not well studied, partly because neither

- the animal's fleshy inner tissue nor its shell has any commercial value. Moreover, in contrast to the greater diversity of the extinct species, the approxi-
 (10) mately 300 known surviving species are relatively, uniform in appearance. Many zoologists have interpreted this as a sign that the animal has been unable to compete successfully with other marine organisms in the evolutionary struggle.
- (15) Several things, however, suggest that the conventional view needs revising. For example, the genus *Lingula* has an unbroken fossil record extending over more than half a billion years to the present. Thus, if longevity is any measure, brachiopods are the most
 (20) successful organisms extant. Further, recent studies suggest that diversity among species is a less important measure of evolutionary success than is the ability to withstand environmental change, such as when a layer of clay replaces sand on the ocean
 (25) bottom. The relatively greater uniformity among the existing brachiopod species may offer greater protection from environmental change and hence may reflect highly successful adaptive behavior.
- The adaptive advantages of uniformity for brachio-
 (30) pods can be seen by considering specialization, a process that occurs as a result of prolonged colonization of a uniform substrate. Those that can survive on many surfaces are called generalists, while those that can survive on a limited range of substrates are called
 (35) specialists. One specialist species, for example, has valves weighted at the base, a characteristic that assures that the organism is properly positioned for feeding in mud and similar substrates; other species secrete glue allowing them to survive on the face of
 (40) underwater cliffs. The fossil record demonstrates that most brachiopod lineages have followed a trend toward increased specialization. However, during periods of environmental instability, when a particular substrate to which a specialist species has
 (45) adapted is no longer available, the species quickly dies out. Generalists, on the other hand are not dependent on a particular substrate, and are thus less vulnerable to environmental change. One study of the fossil record revealed a mass extinction of brachiopods
 (50) following a change in sedimentation from chalk to clay. Of the 35 brachiopod species found in the chalk, only 6 survived in the clay, all of them generalists.

- As long as enough generalist species are maintained, and studies of arctic and subarctic seas (55) suggest that generalists are often dominant members of the marine communities there, it seems unlikely that the phylum is close to extinction.
21. In the passage, the author is primarily concerned with
- (A) rejecting an earlier explanation for the longevity of certain brachiopod species
 - (B) reevaluating the implications of uniformity among existing brachiopod species
 - (C) describing the varieties of environmental change to which brachiopods are vulnerable
 - (D) reconciling opposing explanations for brachiopods' lack of evolutionary success
 - (E) elaborating the mechanisms responsible for the tendency among brachiopod species toward specialization
22. It can be inferred from the passage that many zoologists assume that a large diversity among species of a given class of organisms typically leads to which of the following?
- (A) Difficulty in classification
 - (B) A discontinuous fossil record
 - (C) A greater chance of survival over time
 - (D) Numerical abundance
 - (E) A longer life span
23. The second paragraph makes use of which of the following?
- (A) Specific examples
 - (B) Analogy
 - (C) Metaphor
 - (D) Quotation
 - (E) Exaggeration
24. The author suggests that the scientists holding the conventional view mentioned in lines 15-16 make which of the following errors?
- (A) They mistakenly emphasize survival rather than diversity.
 - (B) They misunderstand the causes of specialization.
 - (C) They misuse zoological terminology.
 - (D) They catalog fossilized remains improperly.
 - (E) They overlook an alternative criterion of evolutionary success.
25. It can be inferred from the passage that the decision to study an organism may sometimes be influenced by
- (A) its practical or commercial benefits to society
 - (B) the nature and prevalence of its fossilized remains
 - (C) the relative convenience of its geographical distribution
 - (D) its similarity to one or more better-known species
 - (E) the degree of its physiological complexity
26. Which of the following, if true, would most strengthen the author's claim (lines 56-57) that "it seems unlikely that the phylum is close to extinction"?
- (A) Generalist species now living in arctic water give few if any indications of a tendency towards significant future specialization.
 - (B) Zoologists have recently discovered that a common marine organism is a natural predator of brachiopods.
 - (C) It was recently discovered that certain brachiopod species are almost always concentrated near areas rich in offshore oil deposits.
 - (D) The ratio of specialist to Generalist species is slowly but steadily increasing.
 - (E) It is easier for a brachiopod to survive a change in sedimentation than a change in water temperature.
27. Information in the passage supports which of the following statements about brachiopods?
- . Few brachiopods living in prehistoric times were specialists.
 - . A tendency toward specialization, though typical, is not inevitable.
 - . Specialist species dominate in all but arctic and subarctic waters.

- (A) I only
- (B) II only
- (C) II and III only
- (D) I and III only
- (E) I, II and III

Since some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

28. MISREAD:

- (A) refocus
- (B) approve
- (C) predict
- (D) explain succinctly
- (E) interpret correctly

29. DISSIPATE:

- (A) gather
- (B) seethe
- (C) relax
- (D) exert
- (E) incite

30. ENUNCIATE:

- (A) mumble
- (B) disclaim
- (C) dissuade
- (D) bluster
- (E) commend

31. TAUTEN:

- (A) rarefy
- (B) coarsen
- (C) force
- (D) loosen
- (E) constrain

32. ZEALOTRY:

- (A) pessimism
- (B) generosity
- (C) gullibility
- (D) lack of fervor
- (E) excess of confidence

33. REDOLENT

- (A) cheerful
- (B) resolute
- (C) unscented
- (D) uncovered
- (E) untainted

34. GLUTINOUS:

- (A) nonviscous
- (B) nonporous
- (C) antitoxic
- (D) catalytic
- (E) alkaline

35. PANEGYRIC:

- (A) covenant
- (B) recantation
- (C) enigma
- (D) termination
- (E) anathema

36. AWASH:

- (A) fouled
- (B) quenched
- (C) rigid
- (D) dry
- (E) sturdy

37. UNTOWARD:

- (A) direct
- (B) fortunate
- (C) tangential
- (D) decisive
- (E) effective

38. SUPERCILIOUS.

- (A) castigating
- (B) obsequious
- (C) reclusive
- (D) rambunctious
- (E) abrasive

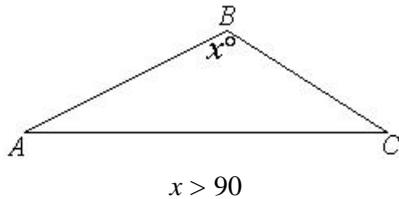
SECTION 5

Time –30 minutes

30 Questions

$$2x - 1 > 0$$

1. x $\frac{1}{4}$



2. The perimeter of $\triangle ABC$ 3 times the length of AC

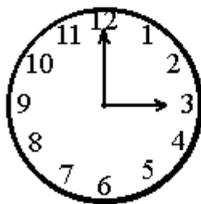
3. The total area of 18 non-overlapping circular regions, each having a diameter of 2 inches 36 square inches

$$0 < p < 1$$

4. The greatest value of $p(1-p)$ $\frac{1}{2}$

S is the sum of the first n negative integer powers of 2; i.e., $S = 2^{-1} + 2^{-2} + \dots + 2^{-n}$

5. s 1

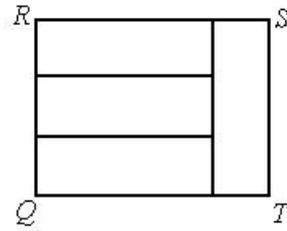


The minute hand of a tower clock is 3 feet long and the hour hand is 2 feet long. The two hands are in the three o'clock position, as shown.

6. The distance between the tips of the two hands of the clock 4 feet

s and t are integers, $s > t$, and $t \neq 0$.

7. $\frac{s}{t}$ s



Rectangular region $QRST$ is divided into four smaller rectangular regions, each with length 1 and width w .

8. $\frac{QR}{RS}$ $\frac{3}{4}$

9. $(5)^0(-3)^0$ 0

10. $\frac{6}{\sqrt{3}}$ $2\sqrt{3}$

$$xy + y^2 = 3$$

11. x y

12. $\frac{0.205}{0.305}$ $\frac{2}{3}$

$$x - 1 = y$$

13. $1-x$ y

The 20 people at a party are divided into n mutually exclusive groups in such a way that the number of people in any group does not exceed the number in any other group by more than 1.

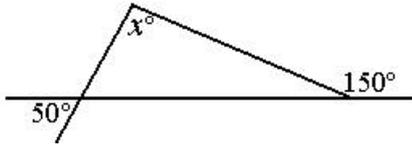
14. The value of n if at least one of the groups consists of 3 people 6

For the line with equation $y = ax + b$, $ab \neq 0$, the x -intercept is twice the y intercept.

15. The slope of the line $\frac{1}{2}$

16. If $x + y = x$, what is the value of y ?

- (A) -2
- (B) -1
- (C) 0
- (D) 2
- (E) It cannot be determined from the information given.



17. In the figure above, $x =$
- (A) 30
 - (B) 80
 - (C) 100
 - (D) 130
 - (E) 160
18. The average (arithmetic mean) number of trees per acre in a 40-acre plot is 140. If a 10-acre section of the plot contains 90 trees per acre, how many trees are there in the remaining 30 acres?
- (A) 5,700
 - (B) 4,700
 - (C) 4,200
 - (D) 3,600

(E) 2,700

19. Which of the following sums is greater than 1?

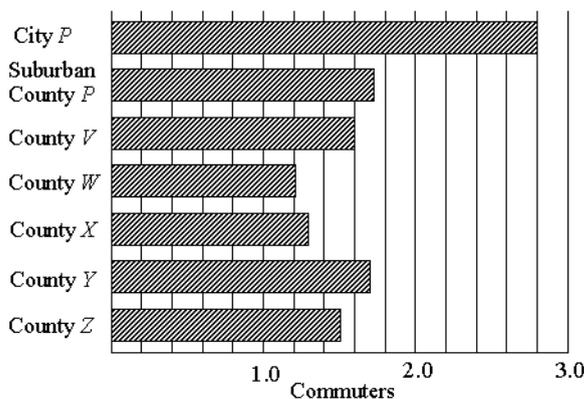
- (A) $\frac{1}{2} + \frac{1}{3}$
- (B) $\frac{7}{8} + \frac{3}{30}$
- (C) $\frac{15}{16} + \frac{2}{40}$
- (D) $\frac{12}{25} + \frac{12}{30}$
- (E) $\frac{35}{102} + \frac{2}{3}$

20. If the vertices of a triangle have rectangular coordinates $(0,0)$, $(8,0)$, and $(8,6)$, respectively, then the perimeter of the triangle is

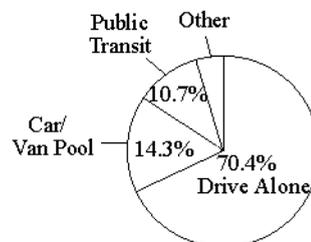
- (A) 10
- (B) 14
- (C) 24
- (D) 36
- (E) 48

Questions 21-25 refer to the following graphs.

AVERAGE VEHICLE OCCUPANCY RATE FOR COMMUTERS TO CITY P AND ITS SIX SUBURBAN COUNTIES



MEANS OF TRAVEL FOR COMMUTERS TO CITY P



Note: Drawn to scale.

21. For how many of the areas listed was the average vehicle occupancy rate for commuters less than 1.8?

- (A) seven
- (B) Six
- (C) Five
- (D) Four
- (E) Three

22. The average vehicle occupancy rate for commuters to County Y is most nearly

- (A) 1.3
- (B) 1.4
- (C) 1.5
- (D) 1.6
- (E) 1.7

23. Of the 2 million people who commute to City P , approximately how many travel by public transit?

- (A) 21,400
- (B) 140,000
- (C) 214,000
- (D) 286,000
- (E) 2,140,000

24. If the average vehicle occupancy rate for commuters to County X were to increase to 2.8, what would be the approximate percent increase in the occupancy rate?

- (A) 46%
- (B) 54%
- (C) 87%
- (D) 115%
- (E) 215%

25. If the total number of commuters to County W is twice the number to County Z , and if the average number of vehicles that transport commuters daily to County W is 30,000, what is the approximate average number of vehicles that transport commuters daily to County Z ?

- (A) 12,000

- (B) 15,000
- (C) 18,000
- (D) 27,000
- (E) 36,000

26. If the average (arithmetic mean) of k and $7k$ is 60, then $k =$

- (A) 6
- (B) 7.5
- (C) 8
- (D) 9.5
- (E) 15

27. In a crate of fruit that contained strawberries, blueberries, and raspberries, the ratio of the number of pints of strawberries to the number of pints of blueberries to the number of pints of raspberries was 6 to 4 to 5, respectively. If the crate contained a total of 45 pints of these fruits, how many more pints of strawberries than blueberries were there in the crate?

- (A) 2
- (B) 3
- (C) 4
- (D) 5
- (E) 6

28. For a project, a square piece of cloth is folded in half and sewed together to form a rectangle that has a perimeter of 36 centimeters. What was the area in square centimeters of the piece of cloth before it was folded?

- (A) 16
- (B) 36
- (C) 81
- (D) 108
- (E) 144

29. How many positive 4-digit integers begin (on the left) with an odd digit and end with an even digit?

- (A) 250

- (B) 500
- (C) 2,000
- (D) 2,500
- (E) 5,000

30. For a certain farm, soybean production increased by 25 percent from year X to year Y , and the selling price of soybeans decreased by 25 percent from year X to year Y . If the entire soybean production was sold each year, approximately what was the percent change in the revenues from the sale of the soybeans from year X to year Y ?

- (A) 56% decrease
- (B) 6% decrease
- (C) No change
- (D) 6% increase
- (E) 56% increase

SECTION 6

Time-30 minutes

25 questions

1. Excavations at a Mayan site have uncovered jewelry workshops located some distance from the center of the site on roads radiating outward from the center. Since the nobility lived only in the area of the center, archaeologists conclude that these workshops made jewelry, not for the nobility, but for a middle class that must have been prosperous enough to afford it.

The archaeologists' argument assumes which of the following about the artisans who worked in the workshops'

- (A) They were themselves prosperous members of a middle class.
- (B) They lived near their workshops.
- (C) Their products were not made from the same materials as was jewelry for the nobility.
- (D) They worked full-time at making jewelry and did not engage in farming
- (E) They did not take the jewelry they had made in the workshops to clients who were members of the nobility.

2. Over the last 40 years there has been a great increase not only in the number of agricultural pesticides in use but also in the care and sophistication with which they are used by farmers. Nevertheless, the proportion of agricultural crops lost to certain pests worldwide has increased over the same period, even when the pests concerned have not developed resistance to existing pesticides.

Which of the following, if true, best explains how improvements in pesticide use have been accompanied by greater losses to certain pests?

- (A) Some dangerous but relatively ineffective pesticides common 40 years ago are no longer in widespread use.
- (B) As pesticides have become increasingly pest-specific, controlling certain pests with pesticides has turned out to cost more in many cases than the value of crop losses caused by

those pests.

- (C) Because today's pesticides typically have more specific application conditions than did pesticides in use 40 years ago, today's farmers observe their fields more closely than did farmers 40 years ago.
- (D) Certain pest-control methods that some farmers use today do not involve the use of chemical pesticides but are just as effective in eliminating insect pests as those that do.
- (E) Forty years ago, much less was known about the effects of pesticides on humans and other mammalian species than is now known.

Questions 3-8

During a single day, exactly seven paintings-G, H, J,K, L, M, and O-will, be auctioned one at a time. Each painting will be auctioned only once. The order in which the paintings are auctioned will comply with the following constraints:

J must be auctioned at some time before M is auctioned.

G and J must each be auctioned at some time before K is auctioned.

H must be the painting auctioned immediately before or immediately after L is auctioned.

3. If K is the seventh painting auctioned, the latest in the order that J can be auctioned is
- (A) second
(B) third
(C) fourth
(D) fifth
(E) sixth
4. If the fourth, fifth, and sixth paintings auctioned are O, M, and H, respectively, which of the following must be true?
- (A) G is the first painting auctioned.
(B) G is the second painting auctioned.
(C) J is the third painting, auctioned.
(D) K is the third painting auctioned.
(E) K is the seventh painting auctioned.
- 5.If O is the first painting auctioned and G is the fifth painting auctioned, then J must be either the

- (A) second or the third painting auctioned
(B) second or the fourth painting auctioned
(C) third or the fourth painting auctioned
(D) third or the sixth painting auctioned
(E) fourth or the seventh painting auctioned

6.If M is auctioned as early in the order as possible, which of the following must be true?

- (A) G is the first painting auctioned.
(B) H is the fourth painting auctioned.
(C) J is the first painting auctioned.
(D) K is the fourth painting auctioned.
(E) O is the seventh painting auctioned.

7. If O is the third painting, auctioned and J is the fourth painting auctioned, Which of the following can be auctioned later in the order than G is auctioned'

- (A) H
(B) J
(C) L
(D) M
(E) O

8. If G is the second painting auctioned and if J is auctioned as late in the order as possible, then O must be the painting auctioned

- (A) first
(B) third
(C) fourth
(D) fifth
(E) seventh

9.Authorities in California required drivers to use their headlights on a certain road during the daytime as well as at night and found that annual accident rates on the road fell 15 percent from the previous level. They concluded that applying the daytime rule statewide would lead to a similar reduction in accidents.

Which of the following, if true, most strengthens the authorities' argument?

- (A) Because an alternate route became available, the volume of traffic on the test road decreased

during the test period.

- (B) Drivers were informed of the requirement to use their headlights on the test road by means of a series of three conspicuous signs in each direction of travel.
- (C) Under certain conditions, among them fog and heavy rain, most drivers in California already use their headlights during the daytime.
- (D) Full-scale application of the daytime rule would cause headlight bulbs to burn out sooner than they currently do and thus to require more frequent replacement.
- (E) The test road was selected to include a great variety of the sorts of road conditions that drivers in California are likely to encounter.

10. Which of the following, if true, most logically completes the passage?

Every fusion reaction releases neutrinos. To test a hypothesis about the frequency of fusion reactions in the Sun, physicists calculated the number of neutrinos the Sun would produce annually if the hypothesis were correct. From this they estimated how many neutrinos should pass through a particular location on Earth. The fact that far fewer neutrinos were counted than were predicted to pass through the location would seem to prove that the hypothesis is wrong, except that-----.

- (A) the physicists, using a different method for estimating how many neutrinos should reach the location, confirmed their original estimate
- (B) there are several competing hypotheses about the frequency of solar fusion reactions
- (C) there is not enough energy in the Sun to destroy a neutrino once it is released
- (D) the method used to count neutrinos detects no more than approximately ten percent of the neutrinos that pass through
- (E) neutrinos released in the fusion reactions of other stars also reach the Earth

11. An economist concluded that Kregg Company deliberately discriminated against people with a history of union affiliation in hiring workers for its new plant. The economist's evidence is that, of the 1,500 people hired to work at the new plant, only

100 had ever belonged to a labor union, whereas in Kregg Company's older plants, a much higher proportion of workers have a history of union affiliation.

Which of the following is an assumption on which the economist's argument depends?

- (A) None of the people with a history of union affiliation who were hired to work at the new plant were union organizers.
- (B) Applicants for jobs at the new plant were not asked by Kregg's recruiters whether they had ever belonged to a labor union.
- (C) In the plants of some of Kregg's competitors, the workforce consists predominantly of union members.
- (D) The company believes that the cost of running the new plant will be lower if labor unions are not represented in the workforce.
- (E) The pool of potential candidates for jobs at the new plant included some people, in addition to those Kregg hired, with a history of union affiliation.

12. Hastings' contracture is a disorder of the connective tissue in one or both hands, most commonly causing loss of mobility. A survey of thousands of medical-insurance claims found that over 30 percent of people who had one hand operated on for Hastings' contracture underwent surgery a second time for this disorder within three years. Clearly, therefore, a single surgical treatment of Hastings' contracture is often ineffective at providing long-term correction of the disorder.

Which of the following, if true, most seriously weakens the argument?

- (A) The medical-insurance claims did not specify whether the surgery was on the patient's right or left hand.
- (B) The surgical techniques used to treat Hastings' contracture are identical to those used successfully to treat certain work-related injuries to the hand.
- (C) A separate survey found that 90 percent of patients operated on for Hastings' contracture

report increased hand mobility within one month after the surgery.

- (D) All of the patients in the survey were required by their insurance companies to seek a second opinion from a qualified surgeon before undergoing the operation.
- (E) Many people who have Hastings' contracture choose to tolerate its effects rather than undergo the risks of surgery.

Questions 13-16

Each of two colored lights on a control panel—light X and light Z—can be any one of exactly four colors: green, orange, purple, or red. The color of either light can change, but X cannot be the same color as Z at any one time. Only one light can change color at any one time. Each change of color is instantaneous.

The following changes are the eight chances possible:

- red to green, and vice versa
- red to orange, and vice versa
- red to purple, and vice versa
- purple to orange, and vice versa

Each change of color is followed by a period during which both lights are steady.

13. Which of the following color sequences could one of the lights go through as its color changes?
- (A.) From green to red to orange to green
 - (B) From green to red to green to purple
 - (C) From purple to orange to green to red
 - (D) From purple to red to green to orange
 - (E) From red to orange to red to purple
14. If X is red and Z is purple, the next color change to occur can be a change from
- (A) green to red
 - (B) orange to red
 - (C) purple to orange
 - (D) purple to red
 - (E) red to purple
15. If X and Z each change color exactly once during a certain period and if, as a result of these changes X is green and Z is orange, which of the following must be true about that period?

- (A) X changed color before Z did.
- (B) Z changed color before X did.
- (C) X was purple before it changed color.
- (D) Z was purple before it changed color.
- (E) Z was red before it changed color.

- 16 If X is orange and Z is purple, an interchange of these colors between X and Z requires a total of at least how many color changes?

- (A) Two
- (B) Three
- (C) Four
- (D) Five
- (E) Six

Questions 17-22

A research laboratory has a contract to do exactly Five experiments—M, P, R, S, and T. Each experiment must be performed separately, one after the other, according to the following restrictions:

- T cannot be done fourth unless S is done second.
- If M is done first, either S or R must be done fifth.
- If R is done fifth, P cannot be done third.
- P must be done sometime before T is done.

17. Which of the following is an acceptable sequence of experiments, from first to last?
- (A) M, P, R, T, S
 - (B) M, P, S, R, T
 - (C) M, S, P, T, R
 - (D) P, M, T, R, S
 - (E) S, M, T, P, R
18. Which of the following experiments can be done fourth and fifth, respectively, in the sequence of experiments?
- (A) M and P
 - (B) P and M
 - (C) P and T
 - (D) T and S
 - (E) T and P

19. If P is done first and S is done second, then T can be done in
- (A) third position, but in neither fourth nor fifth position
 - (B) fourth position, but in neither third nor fifth position
 - (C) fifth position, but in neither third nor fourth position
 - (D) either third or fourth position, but not in fifth position
 - (E) either third, fourth, or fifth position
20. If S is to be done at some time after T, then T can be done in
- (A) first position, but in no other position
 - (B) second position, but in no other position
 - (C) third position, but in no other position
 - (D) either second or third position, but in no other position
 - (E) either first, second, or third position, but in no other position
21. If M is done first, which of the following true?
- (A) P is done second.
 - (B) P is done third.
 - (C) R is done fourth.
 - (D) R is done fifth.
 - (E) T is done second
22. If as many of the experiments as possible must be performed between R and S, which of the following must be true?
- (A) M is done fourth.
 - (B) P is done third.
 - (C) P is done fourth.
 - (D) R is done fifth.
 - (E) T is done fourth.
23. The most widely used therapy for a certain type of ulcer completely heals such ulcers in 44 percent of patients within six months. In a six-month trial of a new therapy for this type of ulcer, 80 percent of ulcers treated achieved significant healing and 61 percent were completely healed. Since the trial treated only ulcers of this type that were worse than average, the new therapy clearly promotes healing more effectively than the most widely used therapy.
- The answer to which of the following would be most useful in evaluating the argument given?
- (A) What differences are there, if any, in the ways that the two therapies are administered?
 - (B) Is there any significant difference between the costs associated with the two therapies?
 - (C) What percentage of people with ulcers of this type who were treated with the most widely used therapy for six months experienced significant healing?
 - (D) How quickly do ulcers of this type, if left untreated, become significantly worse.
 - (E) What percentage of patients involved in the six-month trial of the new therapy were disappointed at the rate of healing were experiencing?
24. A society can achieve a fair distribution of resources only under conditions of economic growth. There can be no economic growth unless the society guarantees equality of economic opportunity to all of its citizens. Equality of economic opportunity cannot be guaranteed unless a society's government actively works to bring it about.
- If the statements given are true, it can be properly concluded from them that
- (A) no government can achieve a fair distribution of resources under conditions of economic growth
 - (B) all societies that guarantee equality of economic opportunity to all of their members are societies that distribute resources fairly
 - (C) a society can achieve a fair distribution of resources only if its government actively works to bring about equality of economic opportunity
 - (D) there can be no economic growth in a society unless that society guarantees a fair distribution of resources
 - (E) some societies that experience economic growth fail to guarantee equality of

opportunity to all of their citizens

25. High Towers, a company that occupies several office buildings, is considering installing new energy-efficient lightbulbs in its buildings. The new bulbs require less than half the electricity consumed by the conventional bulbs currently used to produce the same amount of light. The new bulbs also last considerably longer. It follows that by replacing old bulbs as they burn out with the new kind of bulb, High Towers would significantly reduce its overall lighting costs. Which of the following, if true, most strengthens the argument given?

- (A) If the new bulbs are widely adopted, as seems likely, they will be produced in large enough quantities to be offered at prices comparable to those of conventional bulbs.
- (B) The utility that supplies High Towers with electricity offers discount rates to its largest customers.
- (C) High Towers has recently signed a contract to occupy an additional small office building.
- (D) High Towers has begun a campaign to encourage its employees to turn off lights whenever they leave a room.
- (E) The company that manufactures the new bulbs has been granted a patent on the innovative technology used in the bulbs and thus has exclusive rights to manufacture them.