

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

I. Verbal and Quantitative Test (Multiple Choice Question: 30%)

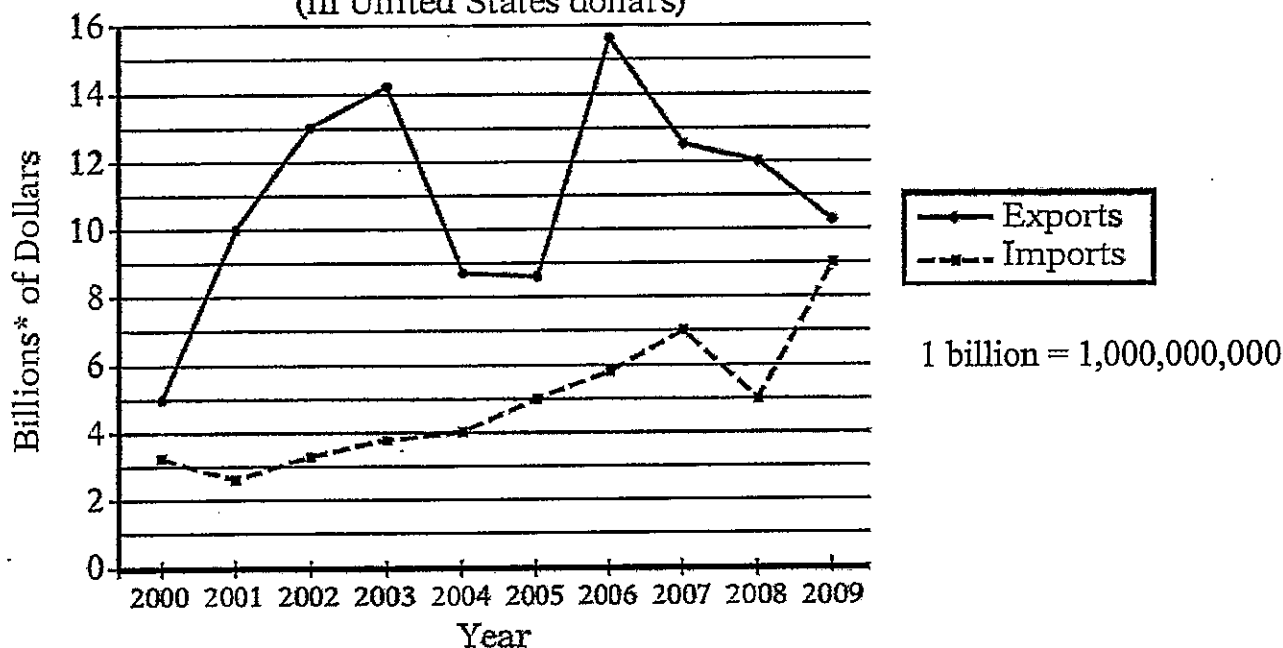
1. Most spacecraft are still at little risk of collision with space debris during their operational lifetimes, but given the numbers of new satellites launched each year, the orbital environment in the future is likely to be less _____.
(A) crowded (B) invulnerable (C) protected (D) polluted (E) benign
2. The epidemiologist was worried: despite _____ signs of danger, few countries or companies had taken the possibility of a pandemic seriously, and there was little interest in developing a vaccine.
(A) erroneous (B) mounting (C) token (D) inconclusive (E) residual
3. The book's seemingly casually written, conversational style masks _____ structure.
(A) a loosely organized (B) a somewhat rambling (C) an overly diffuse
(D) a shrewdly crafted (E) an unconventionally informal
4. This filmmaker is not outspoken on political matters: her films are known for their aesthetic qualities rather than for their _____ ones.
(A) polemical (B) cinematic (C) narrative (D) commercial (E) dramatic
5. Although grandiose urban railroad stations are often viewed as glorious monuments to their cities, they in fact _____ the cities by enabling the migration of city dwellers to the suburbs.
(A) invigorate (B) enlarge (C) enfeeble (D) delineate (E) overshadow
6. The company at which Mark is employed has 80 employees, each of whom has a different salary. Mark's salary of \$43,700 is the second-highest salary in the first quartile of the 80 salaries. If the company were to hire 8 new employees at salaries that are less than the lowest of the 80 salaries, what would Mark's salary be with respect to the quartiles of the 88 salaries at the company, assuming no other changes in the salaries?
(A) The fourth-highest salary in the first quartile
(B) The highest salary in the first quartile
(C) The second-lowest salary in the second quartile
(D) The third-lowest salary in the second quartile
(E) The fifth-lowest salary in the second quartile

7. A reading list for a humanities course consists of 10 books, of which 4 are biographies and the rest are novels. Each student is required to read a selection of 4 books from the list, including 2 or more biographies. How many selections of 4 books satisfy the requirements?

- (A) 90 (B) 115 (C) 130 (D) 144 (E) 195

Noted that Questions 8 to 10 are based on the following figure.

Value of Imports to and Exports from Country T, 2000-2009
(in United States dollars)



8. Which of the following is closest to the average (arithmetic mean) of the 9 changes in the value of imports between consecutive years from 2000 to 2009?

- (A) \$260 million (B) \$320 million (C) \$400 million (D) \$480 million (E) \$640 million

9. In 2008 the value of exports was approximately what percent greater than the value of imports?

- (A) 40% (B) 60% (C) 70% (D) 120% (E) 140%

10. If it were discovered that the value of imports shown for 2007 was incorrect and should have been \$5 billion instead, then the average (arithmetic mean) value of imports per year for the 10 years shown would have been approximately how much less?

- (A) \$200 million (B) \$50 million (C) \$20 million (D) \$7 million (E) \$5 million

II. Reading Test (Multiple Choice Question: 30%)

Article I for Question 11-15

Researchers in the field of psychology have found that one of the best ways to make an important decision, such as choosing a university to attend or a business to invest in, involves the utilization of a decision worksheet. Psychologists who study optimization compare the actual decisions made by people to theoretical ideal decisions to see how similar they are. Proponents of the worksheet procedure believe that it will yield optimal, that is, the best decisions. Although there are several variations on the exact format that worksheets can take, they are all similar in their essential aspects. Worksheets require defining the problem in a clear and concise way and then listing all possible solutions to the problem. Next, the pertinent considerations that will be affected by each decision are listed, and the relative importance of each consideration or consequence is determined. Each consideration is assigned a numerical value to reflect its relative importance. A decision is mathematically calculated by adding these values together. The alternative with the highest number of points emerges as the best decision. Since most important problems are multifaceted, there are several alternatives to choose from, each with unique advantages and disadvantages. One of the benefits of a pencil and paper decision-making procedure is that it permits people to deal with more variables than their minds can generally comprehend and remember. On the average, people can keep about seven ideas in their minds at once. A worksheet can be especially useful when the decision involves a large number of variables with complex relationships. A realistic example for many college students is the question "What will I do after graduation?" A graduate might seek a position that offers specialized training, pursue an advanced degree, or travel abroad for a year. A decision-making worksheet begins with a succinct statement of the problem that will also help to narrow it. It is important to be clear about the distinction between long-range and immediate goals because long-range goals often involve a different decision than short-range ones. Focusing on long-range goals, a graduating student might revise the question above to "What will I do after graduation that will lead to successful career?"

11. What does the passage mainly discuss?
- (A) A tool to assist in making complex decisions.
 - (B) A comparison of actual decisions and ideal decisions.
 - (C) Research on how people make decisions.
 - (D) Differences between long-range and short-range decision making.
12. Of the following steps, which occurs before the others in making a decision worksheet?
- (A) Listing the consequences of each solution
 - (B) Calculating a numerical summary of each solution
 - (C) Deciding which consequences are most important
 - (D) Writing down all possible solutions

13. According to decision-worksheet theory, an optimal decision is defined as one that
- (A) has the fewest variables to consider
 - (B) uses the most decision worksheets
 - (C) has the most points assigned to it
 - (D) is agreed to by the greatest number of people
14. The author develops the discussion in paragraph I by means of
- (A) describing a process
 - (B) classifying types of worksheets
 - (C) providing historical background
 - (D) explaining a theory
15. The author states that "On the average, people can keep about seven ideas in their minds at once (which is underlined) to explain that
- (A) most decisions involve seven steps
 - (B) human mental capacity has limitations
 - (C) some people have difficulty making minor as well as major decisions
 - (D) people can learn to keep more than seven ideas in their minds with practice

Article II for Question 16-20

According to sociologists, there are several different ways in which a person may become recognized as the leader of a social group in the United States. In the family, traditional cultural patterns confer leadership on one or both of the parents. In other cases, line such as friendship groups, one or more persons may gradually emerge as leaders, although there is no formal process of selection. In larger groups, leaders are usually chosen formally through election or recruitment. Although leaders are often thought to be people with unusual personal ability, decades of research have failed to produce consistent evidence that there is any category of 「natural leaders.」 It seems that there is no set of personal qualities that all leaders have in common; rather, virtually any person may be recognized as a leader if the person has qualities that meet the needs of that particular group. Furthermore, although it is commonly supposed that social groups have a single leader, research suggests that there are typically two different leadership roles that are held by different individuals. Instrumental leadership is leadership that emphasizes the completion of tasks by a social group. Group members look to instrumental leaders to 「get things」 done.」 Expressive leadership, on the other hand, is leadership that emphasizes the collective well-being of a social group's member. Expressive leader are less concerned with the overall goals of the group than with providing emotional support to group members and attempting to minimize tension and conflict among them. Group members expect expressive leaders to maintain stable relationships within the group and provide support to individual

members. Instrumental leaders are likely to have a rather secondary relationship to other group members. They give orders and may discipline group members who inhibit attainment of the group's goals. Expressive leaders cultivate a more personal or primary relationship to others in the group. They offer sympathy when someone experiences difficulties or is subjected to discipline, are quick to lighten a serious moment with humor, and try to resolve issues that threaten to divide the group. As the differences in these two roles suggest, expressive leaders generally receive more personal affection from group members; instrumental leaders, if they are successful in promoting group goals, may enjoy a more distant respect.

16. What does the passage mainly discuss?
- (A) The problems faced by leaders.
 - (B) How leadership differs in small and large groups.
 - (C) How social groups determine who will lead them.
 - (D) The role of leaders in social groups.
17. The passage mentions all of the following ways by which people can become leaders EXCEPT
- (A) recruitment
 - (B) formal election process
 - (C) specific leadership training
 - (D) traditional cultural patterns
18. The passage indicates that instrumental leaders generally focus on
- (A) ensuring harmonious relationships
 - (B) sharing responsibility with group members
 - (C) identifying new leaders
 - (D) achieving a goal
19. A 「secondary relationship」 (which is underlined) between a leader and the members of a group could best be characterized as
- (A) distant
 - (B) enthusiastic
 - (C) unreliable
 - (D) personal
20. Paragraphs 3 and 4 organize the discussion of leadership primarily in term of
- (A) examples that illustrate a problem
 - (B) cause and effect analysis
 - (C) narration of events
 - (D) comparison and contrast

III. Writing Test (Translate the Following Paragraphs into Chinese: 40%)

Andrew J. Viterbi's Legacy

Communications pioneer Andrew J. Viterbi has forever changed how people everywhere connect and communicate, whether from across a crowded city, between nations or from the infinite reaches of space. Born into an analog world, this visionary thinker opened the doors to the digital age with the Viterbi Algorithm. The 「Viterbi Algorithm」, a groundbreaking mathematical formula to eliminate signal interference, paved the way for the widespread use of cellular technology, and catapulted Viterbi into the limelight of wireless communications worldwide.

The algorithm Andrew J. Viterbi invented in 1966, and published the following year, is specifically focusing on electronic signals encoding messages. As wireless signals are transmitted through the air, for example, they pick up noise and interference. The Viterbi algorithm provides an elegant way to recover the original signal and throw away the noise. To transmit messages so they won't be degraded or lost by noise, additional 「redundant」 information is added at the transmitter, in a process called error correction coding. The result coming into a receiver is a pulsing, miscellaneous stream of bits, ones and zeros. The signals aren't clear zeros and ones, but values on a sliding scale that the receiver has to designate as zeros and ones, as best it can. Thanks to the Viterbi Algorithm, this sliding confusion of radio waves can yield a clear, undamaged message. The key rests in a time series of incoming information, with each set of bits tagged by its order of arrival.

Today, the Viterbi Algorithm is used in all four international standards for digital cellular telephones, as well as in data terminals, digital satellite broadcast receivers and deep space telemetry. Viterbi is also a Qualcomm co-founder. At Qualcomm, Viterbi made major impacts with his work on the CDMA standard, which transformed the theory and practice of digital communications. CDMA or 「code division multiple access」 allows many users to share the same radio frequencies, and thereby increase system capacity many times over analog system capacity.