



I. (40%) 克漏字測驗 (20 題, 每題 2 分)

July 4 also meant fireworks. The exploding of firecrackers could __ (1) __ all day long. Fireworks were __ (2) __ in the evening. But there were many accidents. As many as 5,000 people __ (3) __ on one July 4 holiday. The demand for a "safe Fourth" became so great that many states made fireworks __ (4) __. Today large __ (5) __ of fireworks are put on by local business, clubs, or communities.

- | | | | |
|---------------|--------------|----------------|---------------|
| 1.(A)hear | (B)listen to | (C)be seen | (D)be heard |
| 2.(A)lay off | (B)laid off | (C)set off | (D)letted off |
| 3.(A)are hurt | (B)were hurt | (C)were hurted | (D)are hurted |
| 4.(A)illegal | (B)national | (C)joyful | (D)impossible |
| 5.(A)displays | (B)parades | (C)outings | (D)services |

Often boys and girls go out on Halloween not to trick or treat but to try to help other children __ (6) __ than themselves. They __ (7) __ money for the United Nations International Children's Fund. This money is used for food, medicine, and __ (8) __ for poor children all over the world. In 1950 a Sunday-school class in one small American community gave up their treats of candy and apples. __ (9) __, they asked for pennies, nickels, and dimes to give to the United Nations Children's Fund. This __ (10) __ was followed by other boys and girls.

- | | | | |
|--------------------|----------------------|-------------|-----------------|
| 6.(A)more lucky | (B)less lucky | (C)as lucky | (D)less luckier |
| 7.(A)call | (B)gather | (C)correct | (D)together |
| 8.(A)services | (B)serve | (C)served | (D)serviceable |
| 9.(A)Take place of | (B)Take the place of | (C)Instead | (D)Besides |
| 10.(A)feast | (B)traditional | (C)gift | (D)example |

As __ (11) __ goes through Chia-yi County, Taiwan __ (12) __ two zones. One is the tropical zone and __ (13) __ is the subtropical zone. The weather is generally hot and humid. __ (14) __ the summer and autumn, there are typhoons which may bring heavy rain and often __ (15) __.

- | | | | |
|-------------------------------|------------------------|-----------------|----------------|
| 11.(A)the Tropic of Cancer | (B)tropical Cancer | | |
| (C)the Cancer of Tropic | (D)Cancer Tropic | | |
| 12.(A)dividing into | (B)is divided into | (C)divided into | (D)dividing to |
| 13.(A)other | (B)another | (C)the another | (D)the second |
| 14.(A)At | (B)While | (C)With | (D)During |
| 15.(A)causes a lot of damages | (B)do a lot of damages | | |
| (C)do a great deal of damage | (D)cause many damages | | |

The salmon starts life as a little egg far up in the big river, like the Columbia in Washington. He eats little __ (16) __ in the water and as soon as the food is not enough for him, he swims __ (17) __ the river into the deep Pacific Ocean, __ (18) __ he spent most of his life. However, he will return to his home in the river where he had left before at the approach of the spawning season. __ (19) __ how far the headwaters of the river are from the ocean, he is



always persistent in swimming forward ____(20)___ he reaches his home.

- | | | | |
|--------------------|----------------|--------------|------------|
| 16.(A)ants | (B)mosquitoes | (C)flies | (D)insects |
| 17.(A)across | (B)down | (C)up | (D)through |
| 18.(A)how | (B)when | (C)where | (D)why |
| 19.(A)Nevertheless | (B)In spite of | (C)No matter | (D)Any |
| 20.(A)to | (B)since | (C)when | (D)until |

II. (15%) 英翻中 (5 題, 每題 3 分)

21. Correct sensor and actuator placement is crucial in determining the performance of a control system
22. An important variable affecting the comprehension of programs is their psychological complexity.
23. Several researchers have found that workers prefer architecturally private offices to open offices and that the lack of privacy affects the level of job satisfaction.
24. If the impulse response for a linear filter is known, then the output for any other input can easily be calculated.
25. The modification may improve the efficiency or accuracy of the algorithm or both.

III. (15%) 中翻英 (5 題, 每題 3 分)

26. 我一生的抱負是要幫我的族人在經濟上情況好轉。(... is to help)
27. 到目前傳統對我們有很大影響。(Tradition has up to)
28. 學好電子學須要時間與技巧。(Itto...)
29. 只有利用每天練習才能精通英文。(Only by master.....)
30. 我確信“有志竟成”。(.... sure....Where.....)

IV. (12%) 閱讀測驗 (31-36) (6 題, 每題 2 分)

What comes into your mind when you think about robots? Do you imagine armies of evil metal monsters planning to take over the world? Or, perhaps of mechanical men who have been created as guards or soldiers by a mad genius? Or maybe you think of man-like robots who act, think, and look like human beings. In fact robots like these have more to do with science fiction films than with real life. In the real world robots are machines that do jobs which otherwise have to be done by people. Robots either operate by themselves or under the control of a person.

In a car factory, for example, robot machinery can put together and paint car bodies. On the sea bed remote controlled underwater machines with mechanical arms can perform tasks too difficult for divers. Robot spacecraft can explore the solar system and send back information about planets and stars.



Many robots have computer brains. Some robots are fitted with cameras, sensors, and microphones which enable them to see, to feel, and to hear. And some robots can even produce electronic speech.

All this does not mean that a robot can think and behave like a human being. Present day robots have to be programmed with a good deal of information before they can carry out even simple tasks.

31. Robots in real life

- (A) can behave like human beings.
- (B) have the ability to control the world.
- (C) can act as the evil guards of a tyrant.
- (D) can help us with a lot of work.

32. According to this article, which of the following is NOT true about robots in the real world?

- (A) Some robots are as creative as artists.
- (B) Some robots can help manufacture cars.
- (C) Some robots can see and hear.
- (D) Some robots can explore outer space.

33. Robots can perform many tasks for man because

- (A) they have intelligence.
- (B) they have computer programs stored in them.
- (C) they can imitate human beings.
- (D) they have the ability to learn new things.

Doctors can be so much concerned with curing diseases that they may fail to notice that sometimes what troubles a patient is not really a disease at all. Dr. Meyer Schwartz described such a case in one of his medical reports.

Dr. Schwartz was on duty at a hospital one morning a few days after Christmas when a man came in complaining only of "blueness to his face of one hour's duration." He reported no other signs of illness, no itching, dizziness or shortness of breath, and no history of heart disease or bleeding disorders. It was only 10:15 a.m. and all the patient had done that day was shower, shave, and dress. So far, his hands and body were still their normal color, but on both sides of his face, it was distinctly blue up to the cheekbones. Knowing that blue skin might indicate a lack of oxygen in the blood or an undesirable drug reaction, Dr. Schwartz checked the patient thoroughly. Finding nothing else out of the ordinary, he sent the blue man home. At 5:30 p.m. the man called Dr. Schwartz to report that he had washed his face and the blue came off." He had received blue towels as Christmas gifts and had used one of them that morning for the first time.

34. The doctor sent the blue-faced man home after

- (A) washing the patient's face.
- (B) curing the blueness with medicine.



- (C) consulting with other doctors.
 (D) a careful examination of the patient.

35. The main point of this passage is that
 (A) some diseases are often difficult for doctors to recognize.
 (B) doctors are often too careless in their medical treatments.
 (C) doctors may sometimes be misled by a patient's complaints.
 (D) some patients like to play practical jokes on doctors.

36. The cause of the blueness was known only after
 (A) a series of examinations was carried out on the patient.
 (B) the blueness suddenly went away with medication.
 (C) another doctor checked the patient more carefully.
 (D) the patient realized what he had done with his Christmas gifts

V. (18%) (A)以 A.B.C.D.E. ... 為代號填入37-40 的空格中。(4題, 每題2分)

: A = for a while B =for the first time C=stay up
 : D = used to E =was not used to F=well G=good

I was not well prepared for the midterm exam until yesterday, so I decided to ___(37)___ to prepare for the exam. I began to study at 7 o'clock. I hoped to study deep into the night, but I felt so sleepy after studying a couple of hours that I had to stop to go out for a walk ___(38)___. After taking a walk, I felt much better. I went back my room to study again. I refreshed myself with a cup of tea. I didn't stop studying until midnight. I went to bed late. I ___(39)___ going to bed so late, so I couldn't sleep ___(40)___ in my life.

(B)以 A.B.C.D.E.F 為代號填入41-45 的空格中。(5題, 每題2分)

: A = something the matter with B= get along with
 : C = put up with D= do without
 : E = keep up with F= do with

41. It is easy to _____ John, because he is kind and considerate.
 42. Helen works so fast that no one in the office can _____ her.
 43. With prices so high I will have to _____ a new suit this year.
 44. I refuse to _____ his rude actions any longer.
 45. Is there _____ Helen? She looks pale.



(1) Find the general solution for the following equations.

(i) $(1+x)dy - ydx = 0$ (15%)

(ii) $y'' - 6y' + 9y = 8e^{3x}$ (15%)

(2) Find the Laplace transform of the function (10%)

$$f(t) = (3t+1)u(t-1)$$

where $u(t)$ is the unit step function.

(3) Find the inverse Laplace transform of the function (10%)

$$F(s) = \frac{s}{s^2 + 4s + 5}$$

(4) Solve the following differential equations. (15%)

$$\begin{cases} x' + y' + x - y = 0 \\ x' + 2y' + x = 0 \end{cases}, \quad x(0) = y(0) = 0$$

(5) Determine the values of k such that the following system of linear equations has

(i) exactly one solution, (7%)

(ii) an infinite number of solutions, (7%)

(iii) no solution. (6%)

$$kx + 2ky + 3kz = 4k$$

$$x + y + z = 0$$

$$2x - y + z = 1$$

(6) Write the vector $w = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ as a linear combination of vectors

$$v_1 = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \quad v_2 = \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix} \quad \text{and} \quad v_3 = \begin{bmatrix} -1 \\ 0 \\ 1 \end{bmatrix}. \quad (15\%)$$