A.   Vocabulary
Choose the one which is closest in meaning to the underlined word or phrase. (20%)

1.   All those with <u>permanent</u> residence in the republic are to be allowed to vote in the poll.
     (A) temporary   (B) forever
     (C) enough   (D) targeted

2.   Conditioners help by smoothing the hair's surface and <u>replenishing</u> some of its natural moisture.
     (A) managing   (B) adding
     (C) finishing   (D) keeping

3.   I didn't want him to be too <u>uptight</u>, so I kept the jokes coming.
     (A) anxious   (B) dangerous
     (C) surprised   (D) relaxed

4.   This theme <u>recurs</u> several times throughout the book.
     (A) breaks out   (B) falls over
     (C) passes quickly   (D) happens again

5.   The new race of photographers tried to seize the <u>fleeting</u> moment and make it stay.
     (A) quiet   (B) wonderful
     (C) depressing   (D) passing

6.   She was <u>sublimely</u> unaware of the trouble she had caused.
     (A) instantly   (B) uniquely
     (C) utterly   (D) unexpectedly

7.   Your eyes are all red and swollen. You look as if you're <u>coming down with</u> a flu.
     (A) reporting   (B) contracting
     (C) falling   (D) healing

8.   Johnny <u>passed out</u> while he was playing tennis.
     (A) hit the ball too hard   (B) left the tennis court
     (C) lost consciousness   (D) failed the game

9.   When the <u>invoice</u> comes in for payment, this is copied on to the system as well.
     (A) bill   (B) sound recording
     (C) information   (D) receipt

10. The <u>uproar</u> over the assault was accompanied by a high level of violence.
     (A) punishment   (B) happening
     (C) commotion   (D) change

B.   Grammar
Each sentence has four underlined words or phrases. You are to identify the one that should be corrected. (20%)

11. Many people are <u>pondering</u> the idea <u>making</u> a second career, or at least a
                       (A)   (B)
     <u>lifelong</u> hobby, out of <u>farming</u>.
        (C)   (D)

12. In this country, a number of dogs registered has increased by a quarter over the
                    (A)   (B)
    past decade while the number abandoned has fallen by a third.
                (C)   (D)

13. Scientists have identified nearly 40 vitamins and minerals that the body needs for
                              (A)   (B)
    various tasks, from shoring up bones to bolster the immune system.
                        (C)   (D)

14. By testing the subjects at regular intervals, researchers can see how dietary
    (A)   (B)   (C)
    changes effect cholesterol and blood pressure.
            (D)

15. Like many of her contemporaries Martha wants the energy that powers her
    (A)   (B)
    business to be sustain into the future.
                    (C)   (D)

16. Parents and kids have sent thousands of angry online letters to the Education
                              (A)
    Ministry complain that the new admissions standard is setting students against
            (B)   (C)
    one another.
        (D)

17. A hundred years ago, a burgeoning, land-hungry population killed off the last
                          (A)   (B)   (C)
    of German's wolves.
        (D)

18. Home to 22 of the world's 25 lowest-birthrate countries, Europe loses 41
    (A)   (B)   (C)
    million people by 2030 even with continued immigration.
                              (D)

19. An object composed largely of earth would, if suspend in air, fall downward,
              (A)   (B)
    while bubbles of air trapped under water would move upward.
                        (C)   (D)

20. Individuals in some cultures began to write down their aesthetic aspirations and
    (A)   (B)
    deeply held values as express in the visual arts.
          (C)   (D)

C.   Sentence Completion
   Choose the one that best completes the sentence. (20%)

21. _____ most programs are benign, some have been accused of promoting cults
    of personality and superstition.
    (A) Since   (B) Because
    (C) Though   (D) If

22. At times the material may be difficult to understand, and you may not grasp it on your first, or _____ your second, reading.
    (A) even   (B) still
    (C) as   (D) before

23. Many behaviors are inherited; _____, they evolved just like the structures of animals.
    (A) consequently   (B) on the contrary
    (C) however   (D) incidentally

24. Fruit that ripens in a dry sunny autumn will often keep longest, _____ a wet season may shorten their storage life.
    (A) because   (B) whereas
    (C) after   (D) unless

25. Cultural groups often _____ successfully to external influences. Sometimes, however, groups find it very difficult to change.
    (A) vary   (B) interact
    (C) adapt   (D) transmit

26. Jack lost his job a year ago, and _____.
    (A) he is already unemployed   (B) he hasn't found another job yet
    (C) he has still found another job   (D) he hasn't found another job already

27. The bus leaves in five minutes, but we can still catch it _____ we run.
    (A) even if   (B) although
    (C) if   (D) because

28. Write your name and address on your bag _____.
    (A) in case you have lost it   (B) in case you lose it
    (C) if you will lose it   (D) if you lose it

29. Chinese culture _____ artists. Imperial patronage of the arts played an important role in this support.
    (A) influenced   (B) composed
    (C) represented   (D) revealed

30. _____ drugs or alcohol, the television experience also allows the participant to blot out the real word and enter into a pleasurable and passive mental state.
    (A) In   (B) Different from
    (C) Unlike   (D) Not unlike

D.   Cloze
Choose the best answer for each blank. (20%)

Passage 1
    Spare time is (31) aimless play. As readers or moviegoers, for instance, we (32) other possibilities, other ways of living our lives. As listeners we discover musical form and, in turn, have our attitudes and emotions (33) by the sounds and words. As athletes we set goals and strive to (34) them, challenging ourselves while we (35) fit.

31. (A) simply   (B) not just   (C) at least   (D) exactly
32. (A) become accustomed   (B) get tired of
     (C) go against   (D) become aware of

33.   (A) shaped   (B) damaged   (C) confused   (D) rejected
34.   (A) reveal   (B) fulfill   (C) confirm   (D) describe
35.   (A) keep   (B) fall   (C) really   (D) very

Passage 2

Computers are becoming more and more (36) in our schools; even five-year-olds are learning how to use them. Many child development experts are worried that computers may deprive children (37) their childhood by pushing them into formal education too (38) in life. (39) feel that computers do not replace child play; they simply enhance it by (40) the imagination, for example in allowing children to write stories on the computer.

36.   (A) expressive   (B) prevalent   (C) variable   (D) expensive
37.   (A) in   (B) at   (C) of   (D) with
38.   (A) easy   (B) much   (C) late   (D) early
39.   (A) Another   (B) Others   (C) Any other   (D) The other
40.   (A) freeing   (B) inventing   (C) changing   (D) catching

E.   **English Writing (20%)**

Write a short composition (100-150 words) in which you describe the most exciting thing that has ever happened to you. Remember to give a title to your writing.

(30%) 1. 根據下列程式，將 Scope of names 的表格填滿。

```
 1.  #define MAX   950
 2.  #define LIMIT 200
 3.
 4.  void one(int anarg, double second);      /* prototype 1 */
 5.
 6.  int fun_two(int one, char anarg);         /* prototype 2 */
 7.
 8.  int
 9.  main(void)
10.  {
11.        int localvar;
12.        . . .
13.  } /* end main */
14.
15.
16.  void
17.  one(int anarg, double second)             /* header 1    */
18.  {
19.        int onelocal;                        /* local 1     */
20.        . . .
21.  } /* end one */
22.
23.
24.  int
25.  fun_two(int one, char anarg)              /* header 2    */
26.  {
27.        int localvar;                        /* local 2     */
28.        . . .
29.  } /* end fun_two */
```

TABLE   Scope of names in this program

Name	Visible in one ( )	Visible in fun_two ( )	Visible in main ( )
MAX	yes	yes	yes
LIMIT	yes	yes	yes
main			
localvar (in main)			
one (the function)			
anarg (int)			
second			
onelocal			
fun_two			
one (formal parameter)			
anarg (char)			
localvar (in fun_two)			

(30%) 2. 名詞解釋：

(a) Compiler

(b) Data structure

(c) De Morgan's law

(d) Moore's law

(e) Top-down design

(f) von Neumann architecture

(20%) 3. 將下列程式的執行結果寫出：

```c
#include <stdio.h>
void tower(int n, char a, char b, char c, char d){
  switch(n) {
    case 0: break;
    case 1: printf("%c->%c\n", a, d); break;
    default:
      tower(n-2, a, c, d, b);
      tower(1, a, b, d, c);
      tower(1, a, b, c, d);
      tower(1, c, b, a, d);
      tower(n-2, b, c, a, d);
  }
}
int main(){
  tower(6,'A','B','C','D');
}
```

(20%) 4. 用 ANSI C 寫一程式：輸入十進位數，輸出其二進位表示式。

一、改錯題（每小題2分，總計30分）

1、一到刮颱風天的時候，石門水庫就開始瀉洪。

2、這匹馬馱了太多東西，已經累得走不動了。

3、他生活奢糜，態度消極，卻不知反省改善，所以朋友紛紛離開了他。

4、他是一個不知反省自己的人，遇事總是一昧的歸疚別人。

5、好高鶩遠，不肯按步就班的努力奮鬥，怎麼能有卓越的成就？

6、他只知貪圖享受，卻不事生產，終至傾家當產。

7、他由於平時缺乏運動，以至身體日漸衰弱。

8、你務必堅強，決不能屈服。

9、他們慣用笑臉外交的技倆來矇騙世人。

10、他將多年存款，全數捐給慈善機構，這種大愛的行為真令我豎然起敬。

11、這次聯考沒有重大蔽病產生，圓滿結束。

12、他那一番話，深深地叩動了我的心絃。

13、那場大車禍，我至今想起，還覺得心有餘忌。

14、違法失職的人要接受法律嚴厲的治裁。

15、林老伯平日急功好義，是鎮上的大好人。

二、選擇題（每小題2分，總計20分）

1、《後漢書‧朱浮傳》載：「往時遼東有豕，生子白頭，異而獻之。行至河東，見群豕皆白，懷慚而還。」後世便以「遼東白豕」比喻 A.出類拔萃 B.少見多怪 C.見怪不怪 D.與眾不同。

2、「衛青不敗由天幸，李廣無功緣數奇。」「數奇」是指 A.不懂奇門遁甲之術 B.計畫不周詳 C.命運乖舛 D.術數奇異。

3、王國維〈蝶戀花〉：「最是人間留不住，朱顏辭鏡花辭樹。」下句是說 A.夫妻離異 B.兒女夭亡 C.家道中落 D.年紀老邁。

4、《論語‧公冶長》：「巧言、令色、足恭，左丘明恥之，丘亦恥之。」「足恭」是指 A.洗腳禮 B.過分謙恭 C.立正敬禮 D.行跪拜禮。

5、「棄市」是指：A.荒廢的城市 B.為人拋棄於市井的廢物 C.罷市 D.死刑。

6、「喬梓」比喻 A.兄弟 B.朋友 C.父子 D.師弟。

7、曹操〈短歌行〉：「山不厭高，水不厭深，周公吐哺，天下歸心。」「吐哺」喻 A.餵飼嬰兒 B.汲汲求才 C.飽食終日 D.挑食。

8、下列何句「堪」字之義不同 A.不「堪」一擊 B.「堪」稱大將 C.情何以「堪」 D.足「堪」重任。

9、下列何者不是聯綿詞 A.窈窕 B.猶豫 C.社稷 D.磅礴。

10、《論語‧陽貨》孔子曾說學《詩》有許多功能，下列何者不是 A.思無邪 B.可以興 C.多識鳥獸草木之名 D.事君。

三、請依下文，自訂題目，寫一篇作文，以抒發自己的心得感想。（50分）

子曰：「唯女子與小人為難養也！近之則不遜，遠之則怨。」（《論語‧陽貨》）。

Part I. No partial credit will be given in this part. Do not need to show all your work. Only the **final result** will be needed.

(1) (7 points) Find the slope of the curve $y^2 = x^2 + \sin(xy)$ at the point $(0, 1)$.

(2) (7 points) The marginal cost of manufacturing x yards of a certain fabric is $C'(x) = 3x^2 - 12x + 15$ (in dollars per yard). Find the increase in cost if the production level is raised from 10 yards to 20 yards.

(3) (7 points) Find $\lim_{x \to 0} \dfrac{1}{x^3} \displaystyle\int_0^x \dfrac{t^2}{t^4 + 1} dt$.

(4) (7 points) Find the area of the region bounded by the curve $y = xe^{-x}$ and the x-axis from $x = 0$ to $x = 4$.

(5) (7 points) Find the volume of the solid generated by revolving about the x-axis the region bounded by the curve $y = \dfrac{4}{(x^2 + 4)}$, the x-axis, and the lines $x = 0$ and $x = 2$.

(6) (7 points) Find the direction in which $f(x, y, z) = x^3 - xy^2 - z$ increases most rapidly at the point $(1, 1, 0)$.

(7) (7 points) Find the local extreme values of the function $f(x, y) = xy - x^2 - y^2 - 2x - 2y + 4$.

(8) (7 points) Find the volume of the tetrahedron D with vertices $(0, 0, 0)$, $(1, 1, 0)$, $(0, 1, 0)$, and $(0, 1, 1)$.

(9) (7 points) Integrate $f(x, y, z) = x - 3y^2 + z$ over the line segment C joining the point $(1, 1, 0)$ to the point $(1, 1, 1)$.

(10) (7 points) Calculate the outward flux of the field $\mathbf{F}(x, y) = x\mathbf{i} + y^2\mathbf{j}$ across the square bounded by the lines $x = -1$, $x = 1$, $y = -1$, and $y = 1$.

(11) (7 points) Find the circulation of the field $\mathbf{F}(x, y, z) = (x^2 - y)\mathbf{i} + 4z\mathbf{j} + x^2\mathbf{k}$ around the curve C in which the plane $z = 2$ meets the cone $z = \sqrt{x^2 + y^2}$, counterclockwise as viewed from above.

Part II. Partial credits will be given in this part. Show **all your work** to get credits.

(12) (8 points) Show that the function $f(x) = x^4 + 2x^2 - 2$ has exactly one zero on the interval $[0, 1]$.

(13) (8 points) Show that $\tan^{-1} x = x - \dfrac{x^3}{3} + \dfrac{x^5}{5} - \cdots + (-1)^n \dfrac{x^{2n+1}}{2n + 1} + \cdots$, $-1 \le x \le 1$.

(14) (7 points) Show that the function $f(x, y) = \dfrac{2x^2 y}{x^4 + y^2}$ has no limit as (x, y) approaches $(0, 0)$