

(I) Vocabulary (40%)

1. The lazy worker needed a little **boost** to work harder.
(A) teaching (B) push (C) reward (D) reminder
2. Although not my responsibility, I was told to **organize** a rescue team for the accident.
(A) investigate (B) form (C) eliminate (D) lead
3. Handwriting is beginning to **irritate** me as I have grown used to using the computer.
(A) frustrate (B) prepare (C) reflect on (D) concentrate on
4. Dennis finally **determined** that the problem was caused by a defective circuit.
(A) reiterated (B) usurped (C) applauded (D) ascertained
5. You are **fortunate** that the boss isn't in yet either, or she would yell at you for being late.
(A) egotistic (B) lucky (C) synthetic (D) destitute
6. We will meet again tomorrow night to **rehearse** the play.
(A) illustrate (B) lament (C) alleviate (D) practice
7. If you do not **specify** a color when you place your order, we will send you a black one.
(A) designate (B) elapse (C) memorize (D) scorch
8. Two months after Emily resigned, she began to **regret** her decision because she had not found another job.
(A) applaud (B) deter (C) nibble (D) lament
9. You like gambling so much; you are **bound to** spend too much money if you go to Las Vegas.
(A) destined to (B) suited to (C) happy to (D) encouraged to
10. Doctors usually **discourage** patients from smoking.
(A) dispel (B) disperse (C) distance (D) dissuade
11. **Predictably**, he decided not to take part in the televised debate.
(A) As a matter of fact (B) No wonder (C) As a result (D) At first
12. He believed that **diligent** work must inevitably lead to financial success.
(A) industrious (B) inevitable (C) intentional (D) inert

國立中正大學九十六學年度學士班二年級轉學生招生考試試題
共同科目：英文

第 3 節

第 2 頁，共 5 頁

13. There has been an atmosphere of **expectation** as Christmas approaches.
(A) animation (B) annoyance (C) answer (D) anticipation
14. Vitamins are **helpful** to fight off common colds and flu.
(A) beloved (B) beneficial (C) benign (D) below
15. The **kindhearted** queen is popular with her subjects.
(A) brief (B) broken (C) benevolent (D) bilingual
16. Although the elderly cannot really work out, they can take a **quick** walk.
(A) brisk (B) quiet (C) brilliant (D) broad
17. We are not allowed to **chat** during working hours.
(A) talk (B) continue (C) joke (D) inquire
18. Why did she marry such an **unrealistic** person?
(A) impossible (B) impressive (C) impractical (D) inactive
19. Chewing gum in class is completely **unsuitable**.
(A) impulsive (B) incomplete (C) inappropriate (D) incapable
20. Mindy is very **superficial** about boyfriends; she only cares whether or not they are handsome.
(A) conventional (B) lucid (C) potent (D) shallow

(II). Grammar (20%)

21. Early Hakka immigrants chose to settle down in the mountains of Miaoli county because the landscape reminded them _____ their homeland's rugged hills.
(A) about (B) on (C) with (D) of
22. Jonathan is very interested in the board game "go," but the fact has just dawned on him only lately that he is not _____ to be a "go" master.
(A) cut off (B) cut out (C) cut in (D) cut down
23. _____ about the people who had inhabited in Taiwan before the current aborigines came.
(A) Is known little (B) Little known (C) Little is known (D) Little know people

24. There is not one of us _____ feel compassion for the refugees and wish to help them.
(A) without (B) but that (C) that we (D) who does not
25. The New Taiwan dollar moved down against its US _____ yesterday at the Taipei foreign exchange market.
(A) opponent (B) replacement (C) counterpart (D) alter-ego
26. Even if you don't have access _____ a Web browser, you can type in an e-mail address that will do the job.
(A) in (B) to (C) through (D) with
27. Mr. Chen's hard work _____ when he was promoted to regional manager.
(A) paid for (B) paid off (C) paid in full (D) paid back
28. _____ causes motion sickness continues to baffle scientists to this day.
(A) What (B) That (C) All (D) The
29. Freshwater aquaculture operations tend to draw off excessive amounts of groundwater, sometimes _____ the surrounding land to shift or cave in.
(A) to cause (B) it causes (C) causing (D) caused
30. What finally separates the good writer from the breezy writer is a quality which is _____ intangible that nobody even knows what it is: taste.
(A) so (B) very (C) much (D) such

(III). Reading comprehension (20%)

(A)

Mr. Greg Hast
GM, Ardent Technologies
45 Spruce Lane
Manchester, CT

Dear Mr. Hast,

Thank you for the samples of memory received by our office on December 26th. We are considering an order of 50 boxes with 50 pieces per box at USD \$32.00 per piece. Thus, the entire order will come to USD \$80,000 before tax and shipping charges. Our forwarding and purchasing office in New York will handle all shipping-related matters. Please have the memory ready on your dock by next Thursday afternoon at 3 p.m. We will have our bank issue you a letter of credit late Wednesday, and it can be delivered by courier early Thursday afternoon around the time our forwarder gets there.

Please give me a call later today to verify this schedule.

Best regards,
James Starter
Purchasing Department
Intelligent Computers, Inc.

31. Which of the following is the buying party in this letter?
(A) Ardent technologies (B) Intelligent Computers, Inc.
(C) Mr. Greg Hast (D) The letter doesn't indicate who is the buying party.
32. What is being purchased/sold?
(A) 50 samples of memory (B) 50 computers
(C) 250 boxes of VCD's (D) 2500 pieces of memory
33. Who will handle shipping matters?
(A) Ardent Technologies' forwarder in New York
(B) Intelligent Computers, Inc.'s forwarder in New York
(C) Another unidentified company in New York
(D) The letter doesn't indicate who will handle the shipping matters.
34. How will the letter of credit be sent?
(A) By courier (B) By mail (C) By fax (D) By e-mail
35. Where does James Starter work?
(A) In the sales and marketing department
(B) At Ardent Technologies
(C) In the purchasing department
(D) At an affiliate of Intelligent Computers, Inc.

(B)

Thomas and Louis Border founded Borders Book Store in 1971. They were brothers in their 20s at the time and opened a small used-book shop in Ann Arbor, Michigan. They managed to work out an inventory management system, servicing independent booksellers, and by 1998 their business had grown to include four stores.

They recruited Robert DiRomualdo to run the business and subsequently sold Borders to Kmart in 1990. Since then, Kmart has been selling the company to the public, and Robert DiRomualdo is currently the CEO. Borders now operates over 225 Borders superstores, with one in Singapore and two in Britain.

Its major competitor is Barnes & Noble. Despite Wall Street's obsession with Borders' Internet Competitor, Amazon.com, which has a market capitalization of over \$4 billion, Borders has remained committed to its brick and mortar approach. Borders has annual profits of over \$100 million, while Amazon is still struggling to get itself out of the red. Although Internet wonders such as Amazon have defied the traditional law of the market, Borders' investors are betting that people will always want to go browse and drink coffee at stores like Borders and its competitor Barnes & Noble.

36. In what year was Borders founded?
(A) 1990 (B) 1988 (C) 1971 (D) In the early 20's
37. What type of business did the bookstore start as?
(A) A superstore with four stores (B) A small used-book/store
(C) A branch under the Kmart group (D) An Internet business
38. According to the article, Borders currently operates stores in all of the following countries except
(A) Britain. (B) The U.S. (C) Singapore. (D) Germany.
39. According to the article, which of the following statements is true?
(A) Borders has a larger market capitalization than Amazon.
(B) Borders is currently making more in revenues than Amazon.
(C) Wall Street is crazy about Borders.
(D) Borders has started an internet business.
40. Which of the following type of businesses would Borders consider a direct competitor?
(A) Internet companies such as Amazon.com.
(B) Other small used-book stores started by students in their 20s from Ann Arbor, Michigan.
(C) Superstores that let readers browse and drink coffee.
(D) Stores such as K-mart that have book sections.

(IV) Writing (20%)

Write one or two paragraphs (250-500 words) describing your first impression of the university/college/school you are currently attending.

(20%) 1. 請根據題目的描述，畫出其 structure chart。其中需包含參數傳遞的項目及方向。

PROBLEM

Write a program that computes a customer's water bill. The bill includes a \$35 water demand charge plus a consumption (use) charge of \$1.10 for every thousand gallons used. Consumption is figured from meter readings (in thousands of gallons) taken recently and at the end of the previous quarter. If the customer's unpaid balance is greater than zero, a \$2 late charge is assessed as well.

DATA REQUIREMENTS

Problem Constants

```
DEMAND_CHG 35.00 /* basic water demand charge */
PER_1000_CHG 1.10 /* charge per thousand gallons used */
LATE_CHG 2.00 /* surcharge on an unpaid balance */
```

Problem Inputs

```
int previous /* meter reading from previous quarter
              in thousands of gallons */
int current /* meter reading from current quarter */
double unpaid /* unpaid balance of previous bill */
```

Problem Outputs

```
double bill /* water bill */
double use_charge /* charge for actual water use */
double late_charge /* charge for nonpayment of part
                   of previous balance */
```

Relevant Formulas

$$\text{water bill} = \text{demand charge} + \text{use charge} + \text{unpaid balance} \\ + \text{applicable late charge}$$

Initial algorithm

1. Display user instructions.
2. Get data:
unpaid balance, previous and current meter readings.
3. Compute use charge.
4. Determine applicable late charge.
5. Figure bill amount.
6. Display the bill amount and charges.

(30%) 2. 名詞解釋：

- (a) Algorithm
- (b) Operating system
- (c) De Morgan's law
- (d) Moore's law
- (e) Side effect
- (f) von Neumann architecture

(30%) 3. 將下列程式的執行結果寫出：

```
#include<stdio.h>
int main(void) {
    int i = 0, j = 3;
    do {
        if(i % 3 == 0) {
            if(++j == 4) {
                j = 1;
                printf("\n");
            }
            else
                i -= 3;
        }
        i++;
        printf("%2dx%2d=%2d", i, j, i*j);
        if(i % 3) printf(" "); else printf("\n");
    } while(i != 6 || j != 3);
}
```

(20%) 4. 用 ANSIC 寫一程式：輸入一字串，將字元前後順序顛倒，再輸出。

一、選擇題（每題 3 分，計 45 分）

1. 「遷客騷人」中的「遷客」指的是：(A. 不得志之詩人 B. 遠方旅遊之人 C. 異地行商之人 D. 因罪流徙他鄉之人)
2. 浪費「公帑」的「帑」字讀作 (A. ㄅㄨˋ B. ㄉㄨˋ C. ㄅㄨˋ D. ㄅㄨˋ)
3. 請問作家夏曼·藍波安是哪一族的原住民？(A. 排灣族 B. 泰雅族 C. 阿美族 D. 達悟族)
4. 「嫠婦」指的是 (A. 寡婦 B. 棄婦 C. 蕩婦 D. 潑婦)
5. 下列何者不是王國維所稱的「人生三境界」(A. 昨夜西風凋碧樹，獨上高樓，望盡天涯路 B. 眾裡尋他千百度，驀然回首，那人在卻在燈火闌珊處 C. 回首向來蕭瑟處，歸去，也無風雨也無晴 D. 衣帶漸寬終不悔，為伊消得人憔悴)
6. 下列哪位詩人與其他三位不屬於同一個時代？(A. 聞一多 B. 徐志摩 C. 郭沫若 D. 鄭愁予)
7. 沈從文的《邊城》以哪個地區的風土人情為背景？(A. 湘西 B. 陝北 C. 黔東南 D. 江南)
8. 以下何者不屬小說「四大奇書」之一？(A. 《紅樓夢》 B. 《水滸傳》 C. 《西遊記》 D. 《三國演義》)
9. 曹丕〈與吳質書〉云：「而偉長獨懷文抱質，恬淡寡欲，有箕山之志。」「箕山之志」指的是：(A. 出將入相之志 B. 歸隱田園之志 C. 奉養父母之志 D. 誨人不倦之志)
10. 下列何者非隱士之典範 (A. 寒山子 B. 陶淵明 C. 嵇康 D. 聶政)
11. 「梓宮」意指：(A. 后妃後宮 B. 廟宇 C. 帝王棺材 D. 科舉考場)
12. 「魯仲連」的形象指的是：(A. 調停紛爭者 B. 急公好義者 C. 與世無爭者 D. 幸災樂禍者)
13. 《圍城》的作者是：(A. 巴金 B. 茅盾 C. 張愛玲 D. 錢鍾書)
14. 下列何者不是白先勇的著作？(A. 《怨女》 B. 《台北人》 C. 《孽子》 D. 《寂寞的十七歲》)
15. 郁永河的《裨海紀遊》記載了他到何處遊歷的經過？(A. 琉球 B. 越南 C. 台灣 D. 印尼)

二、請寫出句子中的錯字，並訂定之。(每題 3 分，計 45 分)

1. 根據國際金融現況，美元的市場行情將有走跌的驅勢。
2. 他最近種的盆景，因為疏於照顧，枝葉凋痿，奄奄一息。
3. 祖父聽說孫子考上了研究所，不禁高興得涕肆縱橫。

國立中正大學九十六學年度學士班二年級轉學生招生考試試題
共同科目：國文

第 4 節

第 2 頁，共 2 頁

4. 明清兩代的政務機關稱為內閣，所以現在總管政務的行政院長也俗稱閣魁。
5. 究竟要不要投資國外基金，我也還在評估關望當中。
6. 這篇論文的理論完全顛負了我們傳統的經典詮釋。
7. 她偏好韻律合諧的音樂，不能接受鏗鏘過度的節拍。
8. 涉案的機關履傳弊端，早該加強整頓，以免敗壞公務員風紀。
9. 每況愈下的媒體八卦風氣，令人痛心棘首。
10. 聽說前女友已經結婚的消息，他只能暗然神傷。
11. 事隔三十年，老人重遊舊地，深感人事以非。
12. 古代的欽天監，掌管天文歷數之事，相當於今日的天文台。
13. 環保運動人士呼諭大家節約能源，不用電器時務必要切掉開關。
14. 學術論文講求推理嚴緊，不能自由心證、空口無憑。
15. 那將軍站在山坡的置高點，居高臨下的觀察敵人的營地。

三、請將下列句子翻譯成通順的白話文。(10分)

夫臺灣固海上之荒島爾！筆路藍縷，以啓山林，至於今是賴。

國立中正大學九十六學年度學士班二年級轉學生招生考試試題

數學系、地球與環境科學系、物理學系、

學系別：化學暨生物化學系、資訊工程學系、

科目：微積分

電機工程學系、通訊工程學系、經濟學系

第 1 節

第 / 頁，共 2 頁

CALCULUS

PART I (70%) - FILL IN THE BLANKS

7% each, NO partial credits.

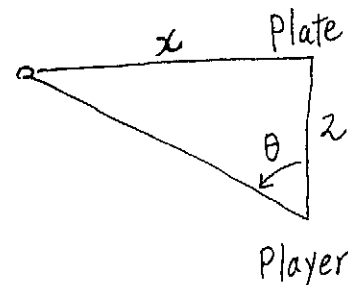
blank.

(1) Consider the function $f(x) = \sin(2x) - 2 \sin x$, where $x \in [-\pi, \pi]$. $f(x)$ has 3 points of inflection and their x coordinates are given by _____.

(2) The directional derivative of $f(x, y, z) = x^2 + yz$ at $(1, -3, 2)$ in the direction of the path $\mathbf{r}(t) = t^2\mathbf{i} + 3t\mathbf{j} + (1 - t^3)\mathbf{k}$ is _____.

(3) $\lim_{x \rightarrow \infty} \frac{1}{x} \int_0^x \sin\left(\frac{1}{1+t}\right) dt =$ _____. (Answer "None" if the limit does not exist.)

(4) A baseball player stands 2 feet from home plate and watches a pitch fly by. In the diagram, x is the distance from the ball to home plate and θ is the angle indicating the direction of the player's gaze. The instantaneous rate of change θ' of the angle θ at which his eyes must move to watch a fastball with $x' = -130$ ft/s (feet per second) as it crosses home plate at $x = 0$ is _____. Given the fact that humans can maintain focus only when $\theta' \leq 3$, the fastest pitch that you could actually watch cross home plate is _____.



(5) $\int_0^{\frac{\pi}{2}} \frac{\sin(2x)}{(\sin x)^{4/3}} dx =$ _____, $\int_0^1 x \ln(x+3) dx =$ _____.

(6) The value of the infinite series $\sum_{n=1}^{\infty} \frac{n}{(n+1)!}$ is _____. (Answer "Diverges" if the series is not convergent.)

(7) A rocket is launched with a constant thrust corresponding to an acceleration of u ft/s². Ignoring air resistance, the rocket's height after t seconds is given by $f(t, u) = \frac{1}{2}(u - 32)t^2$ feet. Fuel usage for t seconds is proportional to u^2t , so the limited fuel

國立中正大學九十六學年度學士班二年級轉學生招生考試試題

數學系、地球與環境科學系、物理學系、
學系別：化學暨生物化學系、資訊工程學系、
電機工程學系、通訊工程學系、經濟學系

科目：微積分

第 1 節

第 2 頁，共 2 頁

capacity of the rocket can be expressed by an equation of the form $u^2 t = 10,000$.

The value of u that maximizes the height that the rocket reaches is _____.

- (8) Let Ω be the parallelogram bounded by the $x + y = 0$, $x + y = 1$, $x - y = 0$ and $x - y = 2$. Then $\iint_{\Omega} (x^2 - y^2) dx dy =$ _____.

PART II (30%) - COMPUTATIONAL PROBLEMS

Show all your work. NO CREDITS if only present answers.

- (1) Let f and g be two functions defined and having finite third order derivatives $f'''(x)$ and $g'''(x)$ for all $x \in \mathbb{R}$. If $f(x)g(x) = \pi$, show that the following relations hold at those points where the denominators are nonzero.

(a) (7%) $\frac{f'(x)}{f(x)} + \frac{g'(x)}{g(x)} = 0$.

(b) (8%) $\frac{f''(x)}{f'(x)} - 2\frac{f'(x)}{f(x)} - \frac{g''(x)}{g'(x)} = 0$.

- (2) A function $F(x, y, z)$ is called homogeneous of degree p if, for all values of the parameter λ , we have the identity

$$F(\lambda x, \lambda y, \lambda z) = \lambda^p F(x, y, z).$$

- (a) (7%) Is the function $G(x, y, z) = x^4 y^2 z \tan^{-1}(z/x)$ homogeneous? If yes, what is the degree? Show all your works.

- (b) (8%) Prove that if $F(x, y, z)$ is differentiable and homogeneous of degree p , then

$F(x, y, z)$ satisfies

$$x \frac{\partial F}{\partial x} + y \frac{\partial F}{\partial y} + z \frac{\partial F}{\partial z} = pF.$$