國立中山大學103學年度轉學考招生考試試題

科目名稱：計算機概論【資管系三年級】　　題號：742004

※本科目依簡章規定「不可以」使用計算機

A. Multiple Choice （單選題） 45%

1. _____is 2's complement of $(01101010)_2$.
   A) $(01101011)_2$
   B) $(10010101)_2$
   C) $(11010101)_2$
   D) $(10010110)_2$

2. Which of the following IPv4 address stands for "localhost"?
   A) 192.168.0.1
   B) 127.0.0.1
   C) 255.255.255.0
   D) 192.168.1.255

3. The postfix expression of A * B - C / (D + E) is _____.
   A) AB * CDE+/-
   B) -*AB/C+DE
   C) AB*CDE-/+
   D) DE+CB/+A*

4. Which of the following is NOT one of the basic structures of structured programming?
   A) Hierarchy
   B) Iteration
   C) Sequence
   D) Selection

5. Which of the following is NOT one of the features of object-oriented programming?
   A) Data Abstraction
   B) Inheritance
   C) Recursion
   D) Polymorphism

6. A stack is initially empty, then the following commands are performed.
   push(3)
   pop()
   push(7)
   pop()
   push(30)
   push(4)
   pop()
   push(2)

   Which of the following is the correct stack (assume the top of the stack is on the left).
   A) 3 7 30 4 2
   B) 2 4 30 7 3
   C) 4 2
   D) 2 30

7. Consider the following C program. What is the result output?

```
struct squareXY { int x, y; };
```

背面有題

```
void squareXY(struct squareXY s){
  s.x = s.x * s.x;
  s.y = s.y * s.y;
}
int main(void) {
  struct squareXY sXY = {4, 8};
  squareXY(sXY);
  printf("sXY.x = %d\n", sXY.x);
}
```

A) "sXY.x = 4"
B) "sXY.x = 0"
C) "sXY.x = 16"
D) "sXY.x = 8"

8. Consider below C statement.

```
const int *p;
```

Which of the following about variable *p* is FALSE?
A) *p* is a pointer variable that points to an object of type *int*
B) The memory address saved in *p* CANNOT be modified.
C) The value of the object that *p* points to CANNOT be modified.
D) The statement "p = &y;" is valid.

9. Which of the following is NOT a keyword of Structured Query Language (SQL)?
A) SELECT
B) INNER
C) EXISTS
D) REMOVE

10. A 2-byte unsigned integer has a range of
A) $0 \sim (2^{16} - 1)$
B) $0 \sim (2^{15} - 1)$
C) $-2^{15} \sim 2^{15} - 1$
D) $-2^{15} - 1 \sim 2^{15}$

11. Which of the following protocols typically operate on top of User Datagram Protocol (UDP)?
A) ARP
B) DNS
C) Telnet
D) All of the above

12. A deadlock situation will NOT arise in a system if _____ condition holds.
A) Circular Wait
B) Mutual Exclusion
C) Preemption
D) Hold and Wait

13. The time complexity of Binary Search algorithm on average is _____.
A) O(n)

B) O(1)
C) $O(n^2)$
D) $O(\log_2 n)$

14. Consider the following C-like bitwise operation statements.

x <<= 1;

x >>= 1;

where << and >> are left and right shifts. Let *x* be an integer on a machine with 4-byte integer. What effect do the statements have?

A) There is no effect.
B) The leftmost bit of x is set to zero.
C) The rightmost bit of x is set to zero.
D) Both (b) and (c).

15. Which statement about using Bubble Sort to sort an integer array is TRUE?
A) swapping values usually requires 3 assignments
B) *n* passes are required to sort the array, where *n* is the number of elements
C) only requires 1 comparison for each element of the array to be sorted
D) the algorithm is faster than other sorting procedures

B. Short Answer 55%

1. Briefly define the following terms and give examples of their applications. 15%
(a) Array (b) C Pointer (c) Stack

2. Use your preferred programming language (e.g. Java, C, ... etc.). Write a recursive function that finds Greatest Common Divisor (最大公因數) of given two numbers by using Euclidean algorithm (輾轉相除法), as below.

$$\gcd(a,b) = \gcd(b,r_0) = \gcd(r_0,r_1) = \gcd(r_{n-2},r_{n-1}) = r_{n-1}$$

where r_n is the remainder. For example, gcd(68, 24) = 4. 10%

3. Consider the following relations, R1 and R2, with their functional dependencies (FD). Please use Armstrong's axioms to check whether they satisfy 3NF and BCNF. Briefly explain your answer.

(a) R1(A,B,C,D). Functional Dependencies for R1: { C->AB, B -> CD } 8%
(b) R2(A,B,C,D). Functional Dependencies for R2: { A->BC, C->D} 8%

4. (a) Construct a Binary Search Tree with the following numbers in order. 8%

{ 28, 36, 21, 15, 25, 47, 30, 12, 19 }

(b) What is the pre-order traversal output of the tree? 6%

國立中山大學104學年度轉學考招生考試試題

科目名稱：英文【資管系三年級】　　題號：742003

※本科目依簡章規定「不可以」使用計算機(混合題)　　

This exam consists of 5 sections, comprising 49 tasks for which a total of 100 points can be earned.

I. Choose the right alternative. 1 point per good choice, a maximum of 30 points

Instructions: In the following story there are 30 boldfaced pairs of words. One of the pair is the right one. On your answer sheet, write down your choice for each of the pairs. Number your answers from 1 to 30.

It all became clear with Sandra (1) **got/getting** a text message from her boyfriend Marvin. In it, Marvin apologized for (2) **having treated/treating** her (3) **unjust/unjustly** the night before. That previous night they had (4) **gone/went** out to dinner (5) **at/in** an expensive restaurant. This often happened: Marvin was very wealthy, and always on the phone with what Sandra (6) **assumed/assured** were business partners. Sandra (7) **had wondered/was wondering**, though, (8) **if/why** today Marvin had a (9) **special/specialty** reason for taking her there: the dinner had been unusually (10) **hasty/hastily** arranged. Was he going to propose to her? It was, after all, (11) **exactly/approximately** two years since their first (12) **date/dating**. She had put on a new (13) **dress/dressing** that had cost her more than (14) **two weeks/two weeks'** wages. (15) **As/During** they were waiting for their food, Sandra smiled (16) **sweetly/encouraging** at Marvin. Marvin, (17) **however/on the contrary**, kept his (18) **sight/eyes** away from his girlfriend, (19) **staring/playing** at his smartphone (20) **instead/unstoppably**. The first course came to their table, (21) **then/than** the second course; next, the waiter brought (22) **they/them** their delicious (23) **desert/dessert**, and Sandra (24) **still/finally** had not been able to get Marvin to say (25) **more than a few/only a few** words. Why was he acting so strangely? Why had he invited her to a dinner that promised so much but (26) **resulted/delivered** so little? Marvin paid for the dinner and ordered a taxi for her. (27) **Puzzling/Puzzled**, she thanked him for a wonderful evening, (28) **hardly/nearly** able to hold back her tears of disappointment. In the taxi, looking back through the rear window, the last thing she saw was Marvin's face illuminated (29) **in/by** the light of his phone. Sandra spent a miserable night, without either sleep (30) **nor/or** rest. The following morning, her phone pinged: "So sorry about last night. I treated you so badly! Forgive me! Arrested by police. Will be in jail soon. Mention my name to no one. Forget me!"

II Match verbs with phrases

Instructions: for phrases 31 –35, write down the verb from the box that fits best. Use each verb only once. 2 points per good answer.

hold	fudge	cauterize	wield	recount

31. To ____ power

32. to _____ sway

33. to _____ a wound

34. to _____ a sales figure

35. to _____ one's misfortunes

III Match nouns with phrases

Instructions: for phrases 36-40, write down the noun from the box that fits best. Use each noun only once. 2 points per good answer.

背面有題

sense	temperament	an advantage	energy	relief

36. a ____ of dread

37. to obtain ____

38. a fiery ____

39. a waste of ____

40. to forgo ____

IV Match words with words of similar meaning

Instructions: Match the words in the box with the words 41-45 that come closest in meanings. Use each word only once. 2 points per good answer.

lose	overbearing	engine	counter	new

41. against

42. propulsion

43. defeat

44. novel

45. domineering

V Reading Comprehension

Instructions: Read the following two texts. Each is followed by two questions to be answered in your own words. For each question, you can get a maximum of 10 points, so in total a maximum of 40 points for this section of the exam. The best answers will show understanding of the texts, and be written in good English.

Text 1: Encrypted Fabric

Your clothes may soon carry a helpful secret. A new type of thread woven into patterns invisible to the naked eye could put an end to fake designer clothes — and dull outfits. Concealed patterns visible only under polarized light are used in some nation' bank notes to deter counterfeiting. To extend the method to other valuables, Christian Müller at Chalmers University of Technology in Gothenburg, Sweden, made a semi-transparent thread from polyethylene and a polymer used in clothes dye. This thread has unique optical properties that allow only certain polarizations to pass through. Weaving the threads together makes a fabric that looks solid purple to the eye but reveals pink and purple patterns when lit with polarized light. Müller says the thread may be used to create unobtrusive logos on designer clothes to thwart knock-offs. He's also looking to make similar threads for use in electronically enhanced textiles that change color with electric voltage, so you could alter your fashion with the flick of a switch. (Adapted from the *New Scientist*, 2012.)

46. In English, explain how the new type of thread can put an end to fake designer clothes.

47. In English, explain how electronically enhanced textiles can put an end to dull outfits.

Text 2: Business Schools

Traditionally, business schools have lacked offerings in the humanities. That is a serious shortcoming. As teachers of leadership, we doubt that our topic can be understood properly without solid grounding in the humanities. When the hard-nosed behavioral scientist James March taught his famous course at Stanford using *War and Peace* and other novels as texts, he emphatically was not teaching a literature course. He was drawing on works of imaginative literature to exemplify and explain the behavior of people in business organizations in a way that was richer and more realistic than any journal article or textbook. Similarly, when executives are given excerpts from the classics of political economy and philosophy in seminars at the Aspen Institute, the intent is not to turn them into experts on Plato and Locke but to illuminate the profound recesses of leadership that scientifically oriented texts either overlook or oversimplify. (Excerpt from Warren Bennis and James O'Toole, "How Business Schools Lost Their Way," May 2005)

48. In English, explain why James March taught *War and Peace* and other novels at a business school.

49. This passage contrasts literary and philosophical texts to another type of texts. What is that other type? Write in English.

End of the Transfer Exam