

系所組別： 交通管理科學系丙組

考試科目： 計算機概論

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

請勿在本試題紙上作答，否則不予計分

一、選擇題：(18%，每題 2 分)

1. (7AB)16 is equal to (A) (13223)16 (B) (1962)10 (C) (11110111100)2 (D) (3653)8 (E) none if the above.

2. Which of the following is wrong?

- (A) Internet use HTTP protocol to link computers
 (B) you can connected to the Internet via wireless devices
 (C) each IP address is of 32 bits
 (D) you can also connected to the Internet via ISP companies
 (E) all of the above are correct (choose this only if (A)~(D) cannot be chosen.)

3. Consider the following C program, what is the value of A(20, 18)? (A) 2 (B) 20 (C) 18 (D) 5 (E) 3

```
int A(int m, int n){
    if (m%n==0)
        return n ;
    else return A(n, m%n) ;
}
```

4. What is the size of a uncompressed picture with pixels 1024*1024 and each pixel has 256 gray levels? (A) 256KB (B) 512KB (C) 1MB (D) 2MB (E) 4MB

5. In following figure, which scheduling policy has the average shortest waiting time?

程序	抵達順序	所需時間(毫秒)
P1	1	15
P2	3	9
P3	2	12

(A) FCFS (First Come First Serve) (B) SJF (Shortest Job First) (C) PS (Priority Scheduling): P1,P3,P2 (D) PS (Priority Scheduling): P3,P2,P1 (E) none of the above.

6. Which one of the following instruction is not included in the SQL DML ?

(A) SELECT (B) CREATE (C) INSERT (D) UPDATE (E) DELETE .

7. Which statement is true about multitasking?

- (A) It is the term applied to multiprogramming in a multi-user system environment
 (B) Multitasking processors are used simultaneously to solve processing tasks
 (C) Multitasking can come in two forms: preemptive and cooperative
 (D) When active, it will use space on a hard disk to store pieces of programs needed for processing
 (E) It is an advanced form of time-sharing.

(背面仍有題目,請繼續作答)

系所組別： 交通管理科學系丙組

考試科目： 計算機概論

考試日期： 0220， 節次： 3

※ 考生請注意：本試題 可 不可 使用計算機

8. A web server is a : (A) Type of Internet service provider (B) Web content provider (C) Computer that stores and distributes Web pages on request (D) Software program that searches for information on the web (E) None of the above.

9. Please transform the Infix sequence $[A*B/C+D/E-F*G]$ into Prefix sequence.

(A) $-*+/*ABC/DEFG$ (B) $-+/*ABC/DE*FG$ (C) $*-+/*ABC/DE*FG$ (D) $*+-*/*ABC/DEFG$ (E) none of the above .

二、問答與計算題：(82%)

1. Please briefly explain the following terminologies. <20%>
 (A) NP-Complete Problem, (B) P2P, (C) Metcalfe's Law, (D) von Neumann Bottleneck, (E) Ad Hoc Network

2. What are the main functions of an operating system. <10%>

3. Please provide an efficient algorithm to solve the following Fibonacci number. <10%>
 $F_0 = 0, F_1 = 1, F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$.

4. Every node in a binary tree has the following structure:

```
struct node {
    int data;
    struct node * leftchild;
    struct node * rightchild;
}
```

The root of the binary tree is pointed to by a pointer T.

Write a complete function that will perform a postorder traversal. <10 %>

5. Explain the ACID principles in the database system. <10%>

6. Explain the differences, advantages and disadvantages of symmetric and asymmetric key encryption systems. <10%>

7. List the sequences of the following binary tree in (a) Preorder, (b) Inorder, and (c) Postorder. <12 %>

