

八十八學年度 工業工程與工程管理系 (所) 工務 組碩士班研究生招生考試

目 計算機概論

科號 2902 共 2 頁第 1 頁 *請在試卷【答案卷】內作答

1. (8%) 簡要解釋以下名詞：

CPU, DRAM, MOUSE, WWW, TCP/IP, CD-ROM, DVD-RAM, TFT-LCD.

2. (10%) 用何種基本資料結構可處理先進先出(First-In-First-Out)? 而用何種基本資料結構可處理先進後出(First-In-Last-Out)?

3. (10%) 以下 C 程式片段執行時列印的結果為何?

```
int n;
float a, b;
n=10; a=10.0; b=5.0;
if(n < 0)
    if(a > b)
        ++n;
else
    --n;
printf("%d\n", n);
```

4. (12%) $f(100) = 100$, $f(99) = 99$, $f(98) = 98$

$$f(n) = f(n+1) + f(n+2) - f(n+3)$$

試寫一段 C 程式及一個遞迴式函式(recursive function)計算 $f(0) = ?$

5. (5%) An array A [n] stores n 2-byte integers. In a 16-bit computer, given that A[1] is at address 100_{10} (decimal), what is the address for A[8] in an octal number?

6. (15%) Convert the following numbers according to the requirements: (You must show your work process to get full credits)

- 7134_8 (8-based) to Hexadecimal
- 3156_{10} (10-based) to octal (8-based)
- $(A2F)_H$ (Hexadecimal) to BCD
- $(1001\ 0111\ 0011\ 1000)_{BCD}$ to hexadecimal
- $(6543)_7$ (7-based) to Decimal

7. (10%) Describe major components in a typical personal computer system. Explain the functions of each component.
8. (5%) From the viewpoint of information hiding, which of the following languages is the best?
- (a) procedural language
 - (b) functional language
 - (c) object language
 - (d) logic language
9. (10%) What are the difference between a roundoff error and a truncation error? What kind of the above errors can be reduced by using double-precision arithmetic operations?
10. (15%) Prime numbers may also be generated by an algorithm known as the *Sieve of Erastosthenes*. The algorithm for this procedure is presented below. Write a C program that implements this algorithm.

Sieve of Erastosthenes Algorithm

To Display All Prime Numbers Between 2 and n

Step 1: Define an array of integers P .

Set all elements P_i to 0, $2 \leq i \leq n$.

Step 2: Set i to 2.

Step 3: Display i as the next prime number.

Step 4: For all positive integer values of j such that $i * j \leq n$ set P_{i*j} to 1.

Step 5: Find the next value of i such that $P_i = 0$ and return to Step 3. If no value is found, then the algorithm terminates.