

一、解釋名詞 (20%)

- (一)、TCP/IP 通訊協定
- (二)、RSA 加密演算法
- (三)、Ubiquitous Learning
- (四)、RFID (Radio Frequency Identification)

二、何謂雜湊法(hashing method)?並說明它的優缺點?何種情形下會發生溢位(overflow)，通常處理溢位的問題又有那些作法? (10%)

三、請比較 programmed I/O、Interrupt-Driven I/O、DMA 等三種 I/O 方式的優缺點。(10%)

四、(10%)

- (一)、求 $(01234)_8$ 之 8、7 的補數，與 $(AE1)_{16}$ 之 16、15 的補數。
- (二)、請分別以 1'補數與 2'補數，求  $(10101)_2 - (01010)_2 = ?$

五、有一個二維陣列 A(0:2,0:3)，以 row-major 方式排列，陣列起始位址是 1000，每個元素佔一個 byte，試求 A(1,3)所在位址? (5%)

六、Move 10 disks in a Hanoi tower. How many times of movement will occur? (5%)

七、以下題目所使用的程式語言為 C 語言：(40%)

- (一)、Please rewrite the following multiple if statements to nested if form. And, point out two benefits of using nested if statements. (10%)

```
if (x > 0)
    num_pos = num_pos + 1;
if (x < 0)
    num_neg = num_neg + 1;
if (x == 0)
    num_zero = num_zero + 1;
```

- (二)、Please write down the execution result of the following statements: (5%)

```
a=1; n=10; s = 0;
while (a<=n)
{ s = s + a; a = a + 1; }
printf(s);
```

- (三)、Please write down the execution result of the following statements: (5%)

```
for( i=1; i<=5 ; i++ )
{ for( j=1; j<=i; j++ )
```

```
printf("");  
printf("\n"); }
```

(四) 、 Please write down the value of **c** after executing the following statements: (5%)

```
a=2; b=4; c = a * ++b;
```

(五) 、 Please write down the values of **a**, **b** and **c** after executing the following statements. (15%)

```
void main(void)  
{   int a=2, b=3, c;  
    int func(int *d);  
    c=a + func(&b); }  
int func(int * d)  
{   *d=*d+4;  
    return *d; }
```