

# 國立成功大學

## 112學年度碩士班招生考試試題

編 號： 123

系 所： 工程科學系

科 目： 計算機概論

日 期： 0207

節 次： 第 2 節

備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。 請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. What would be the results of call\_by\_Mode function (test [element]) when the parameters are passed by three modes. (18%)

```

element    : Integer
test       : Integer array of size 2
    
```

```

function call_by_Mode(x: Integer)
    
```

```

{
    test[1] := 6;
    element :=2;
    x       :=x+3;
}
    
```

```

function Main ()
    
```

```

{
    test[1] :=1;
    test[2] :=2;
    element :=1;
    call_by_Mode (test[element]);
}
    
```

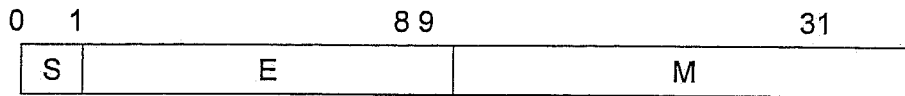
Mode	Results		
	test[1]	test[2]	element
Call by address			
Call by vale			
Call by reference			

2. Please explain which three parts are included in the structure of the CPU and what are their functions? (12%)

3. Please comparison of register, main memory and disk storage. (10%)

4. The real numbers stored in the computer with binary will usually produce errors, which one of  $0.1_{10}$  or  $0.625_{10}$  will not have errors in the computer with IEEE 754 format ? Please explain your answer step by step. (15%)

IEEE 754 Format :



$$N = (-1)^S \times 2^{(E-127)} \times (1.M) \quad 0 < E < 255$$

Base : 2

S : Sign Bit , 0 : Positive number , 1 : Negative Number .

M : Mantissa .

E : Exponent , Excess-127 .

5. Answer the following questions regarding deadlocks. (15%)
- (a) What is a deadlock ? How to represent a deadlock ? (5%)
  - (b) How to detect a deadlock ? And if a deadlock is detected, how to resolve the deadlock ? (5%)
  - (c) By carefully designing your system, deadlock can be avoided and never occur in the system. Give a technique that can be used to avoid deadlocks. (5%)

6. Please trace the following python code and find the final value of variable "count". (16%)

6.1 (4%)

```
count = 0
for i in range(5):
    for j in range(5):
        count += 1
```

print(count)

6.2 (4%)

```
count = 0
for i in range(5):
    for j in range(i):
        count += 1
```

print(count)

6.3 (4%)

```
count = 0
for i in range(5):
    for j in range(i, 5):
        count += 1
```

print(count)

6.4 (4%)

```
count = 0
i = 1
while(i < 15):
    i = 2*i
    count += 1
```

print(count)

7. Explain briefly the techniques of the disk cache and RAM disks. What is the major difference between them? (14%)