國立嘉義大學九十五學年度
資訊工程學系碩士班招生考試試題

科目：計算機概論

1. In the following code, consider the binding time. (12 %)

```
int count;
count = count + 5;
```

Type of count is bound at _____
Value range of count is bound at _____
Value of count is bound at _____

Definition of "+" op is bound at _____

(a) compile time.
(b) execution time.
(c) compiler design time.
(d) language design time.

2. In the following procedure, calculate R values for different call types. (9 %)

```
Procedure P(A,B,C){
B=C;
Return (A+C);}
```

In the above code, if X=3, Y=4, R=P(X,X,X+Y), what is the R value if:
(a) call-by-value, R =_____
(b) call-by-reference, R =_____
(c) call-by-name, R =_____

3. What is the chief disadvantage of "s" super server that call `CreateProcess` to create a new process for each request? (9 %)

4. What is the difference between static and dynamic server configuration. (10 %)

5. In programming languages, what is the difference between scope and lifetime. (10 %)

6. In programming languages, what is the difference between reference and dereference. (10 %)

7. Please describe the following questions:
(a) What is a cache memory? (5 %)
(b) Show the three types of cache mapping and explain the functionality of each. (5 %)

8. Please use 16-bit floating-point notation, which uses the highest-order bit for sign, the following 4 bits (4-bit excess notation) for exponent, and the remaining 11 bits for mantissa, to illustrate the addition of the following two numbers: $15\frac{11}{16}$ and $-\frac{5}{8}$ (6 %); and generate the result.

9. You are to design and operate an E-commerce system for the government.
(a) First provide a definition for the E-commerce? (6 %)
(b)The government E-commerce system needs a protocol to allocate tasks among potential contractors on the Internet. Describe the steps and the considerations in each step for announcing toward awarding the contract for the E-commerce system. (6 %)

10. Describe the following questions in detail and calculate the result:
(a) Provide a definition of Moore's Law. (6 %)
(b) Calculate the annual growth rate of IC capacity based on Moore's Law. (6 %)