中 華 大 學

九十七年度研究所碩士班招生入學考試試題紙

系所別:生物資訊學系碩士班 組別: 科目:計算機概論 共3頁第1頁

不可攜帶計算機

Multiple Choice Questions: (15%)

__1. The following chart shows a few RGB values and the colors they present.

The color on the blank should be (1) Green (2) White (3) Black (4) Cyan

Red	Green	Blue	Color
0	0	0	
255	255	255	white
255	255	0	yellow
157	95	82	purple

_____2.Convert the decimal number 15.75 to binary (1)1111.11 (2)F.2 (3) 1111.10 (4)1111.01

_____3. Convert the hexdecimal number 3FC to octal (1)1111111100 (2)1020 (3)31512 (4)1774

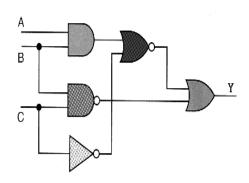
Short Answer Questions:

1. Compare and contrast RAM and ROM? (5%)

2. What is Von Neumann architecture? (10%)

3. The four classifications of computer architectures defined by Flynn. They are SISD, SIMD, MIMD and MISD. Please explain the major differences between the four classifications. (10%)

4. Show the behavior of the following circuit with a truth table: (10%)



Α	В	С	Υ
			·

5. In the following properties of Object Oriented Program (OOP), simply explain and indicate the major advantage of each property. (10%)

- a. Abstraction:
- b. Information hiding:
- c. Overload:
- d. Polymorphism:
- e. Inheritance:

6. Function factorial(n)=n!=1*2*....*(n-1)*n. Write both non-recursive function and recursive function for factorial(n) using C language. (10%)

7. Assuming A is an **array**[1..n] of recordtype and n is the number of records in the following bubblesort algorithm, (a) indicate the computing steps for each statement. (b) Then calculate total computing steps and (c) simplified it into software complexity (Big-Oh). (10%)

```
for(i=1;i<=n-1;i++){
  for(j=n; j<=i+1;j--){
    if (A[j].key <A[j-1].key){
      temp=A[j].key;
      A[j].key=A[j-1].key;
      A[j-1].key=temp;
    }
}</pre>
```

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8. The relationships between family members are indicated in the following PROLOG facts. Write a rule for each relationship (Problem a-d). (10%)

parent(pam, bob). % Pam is a parent of Bob parent(tom, bob). parent(tom, liz).

parent(bob, ann). parent(bob, pat).

parent(pat, jim).

female(pam). % Pam is female male(tom). % Tom is male female(liz).

female(ann). female(pat).

male(jim).

(a) mother(X,Y):- (b) grandfather(X,Y):-

(c) sister(X,Y):- (d) has_child(X):-

(e) predecessor(X,Y) means X is previous generation of Y. Use one fact and one recursive rule to indicate predecessor(X,Y).

9. Transfer the following E-R model into relation database scheme (6 tables, their attributes and their primary key). (10%)

