佛光人文社會學院九十二學年度碩士班招生考試試題卷

系所別：資訊學系碩士班

科　目：資訊概論　　用紙第 1 頁共 3 頁

一、選擇題　　(每題兩分，共 20 分)

1. The method that uses the computer's hard disk for additional RAM is called: ① partitioning; ② threading; ③ virtual memory; ④ multiprocessing; ⑤ none of the above。

2. Expert systems are: ① computer hardware systems designed for a specific purpose ;② systems designed by experts rather than by a home programmer; ③ computer programs that use a database of knowledge to make decisions; ④ natural logarithmic languages used by most computers; ⑤ none of the above。

3. 「矩形」這個圖形它在流程圖(flow chart)及用以描述資料間關係的實體-關聯圖(E-R diagram)中分別代表:①「決策判斷」和「實體的屬性」，②「處理」和「實體間的關係」，③「決策判斷」和「實體間的關係」，④「處理」和「實體的屬性」，⑤「開始」和「弱勢實體的型態」。

4. 在 OSI 模式中，_____負責資料格式轉換的工作。①傳輸層，②網路層，③資料鏈結層，④應用層，⑤展現層。

5. The acronym, "MIPS," stands for: ① millions of instructions per storage; ② millions of instructions per second; ③ memory instructions per storage; ④ memory instructions per second; ⑤ all of the above ⑥ none of the above。

6. Which of the following is true in client/server systems? ① A client may request services from multiple servers; ② A middleware is used to replace both front-end and back-end software; ③ A server may request services from multiple clients; ④ Clients processes are dependent on server processes; ⑤all of the above。。

7. An artificial neural network is: ① a collection of Internet Web sites used by businesses to exchange marketing information; ② a LAN used in biological research; ③ a network management tool; ④ a computer program that mimics the pattern recognition capabilities of human brain; ⑤none of the above。

8. An employee may work on several projects and a project may have several employees working on it. What kind of relationship is this relationship an example of? ①one-to-one relationship; ②one-to-many relationship; ③ many-to-many relationship; ④ all of the above; ⑤ none of the above。

9. Consider the quick sort algorithm: ① The average-case time complexity of this algorithm is the same as that of the merge sort algorithm; ② The best-case time complexity of this algorithm is the same as that of the bubble sort algorithm; ③ The worst-case time complexity of this algorithm is the same as that of the radix sort algorithm; ④ The time complexity of this algorithm is the same as that of the heap sort algorithm; ⑤ The above four statements are all wrong。

10. Consider the symbol table of an assembler, which data structure will make the searching faster (assume the number of symbol is greater than 50)? ① Sorted array; ② Hashing table; ③ Binary search tree; ④ Unsorted array; ⑤ Linked list ; ⑥ all of the above。

二、名詞解釋

(每題三分，共 30 分)

1. Data Dictionary
2. Genetic Algorithm
3. Structure English
4. Extranet
5. OLAP
6. MPEG 4
7. UML
8. AVL-Tree
9. Data Mining
10. XML

三、簡答題

(共 50 分)

1. 當資料量(N)很大時，(a). $O(2^N)$、(b). $O(N^3)$、(c). $O(\log N)$以及(d). $O(N)$這四種時間複雜度的程式中，何者可以獲得較快的執行結果？又何者較慢？為什麼？ (10 分)

2. 請列舉並簡要說明「作業系統」(Operating System, OS)的主要功能。 (7 分)

3. 請依序寫出資料處理作業中資料的階層架構(data hierarchy)？ 並舉一個實際的例子來協助說明之。 (8 分)

4. 請分別寫出以下三個程式的執行結果： (15 分)

(a)

```
#include <iostream>
using namespace std;

void figureMeOut(int &x, int y, int& z);

int main()
{
      int one = 2, two = 5, three = 8;
      figureMeOut(one, two, three);
      cout << one << " " << two << " " << three << endl;
      return 0;
}

void figureMeOut(int &x, int y, int& z)
{
      cout << x << " " << y << " " << z << endl;
      x = 20;
      y = 50;
      z = 80;
      cout << x << " " << y << " " << z << endl;
}
```

(b)

```
#include <iostream>
using namespace std;

void fillUp(int a[], int size);

int main()
{
      const int SIZE = 10;
      int number[SIZE];
      fillUp(number, SIZE);
      for (int i = 3; i < 6; ++i)
          cout << number[i] << endl;
      return 0;
}

void fillUp(int a[], int size)
{
      a[0] = 1;
      a[1] = 1;
      for (int i = 2; i < size; ++i)
          a[i] = a[i - 1] + a[i - 2];
}
```

(c)

```
#include <iostream>
using namespace std;

char mystery(int firstParameter, int secondParameter);

int main()
{
      cout << mystery(1, 1000) << "ow\n";
      cout << mystery(100, 10) << "ow\n";
      return 0;
}

char mystery(int firstParameter, int secondParameter)
{
      if (firstParameter >= secondParameter)
          return 'W';
      else
          return 'H';
}
```

5. List the nodes for the following tree. (10 分)
   (a) preorder traversal; (b) inorder traversal; (c) postorder traversal.