淡江大學九十四學年度進修學士班轉學生招生考試試題

系別： 資訊工程學系三年級　　科目： 資　訊　概　論

1　Name the protocol used for each network application below.　(10%)

  a)　File transfer

  b)　Email service

  c)　WWW

  d)　Remote login

  e)　Internet access from a mobile phone

Note: Answer problems 2~4 using the circled numbers ①②③④⑤

2　Consider the following data compression methods　(10%)

    ① Huffman coding　② MPEG　③ WMA

    ④ JPEG　　　　　⑤ LZW

  a)　Which are lossless?

  b)　Which are lossy?

3　Consider the following sorting algorithms　(10%)

    ① Mergesort　② Quicksort　③ Selection sort

    ④ Bubble sort　⑤ Counting sort

  a)　Which take(s) a time in $O(n \log n)$ in the worst case?

  b)　Which take(s) a time in $O(n^2)$ in the worst case?

4　Consider the following software engineering terminologies　(10%)

    ① Coupling　② Cohesion　③ Modularity

    ④ Incrementing　⑤ Interoperability

  a)　Which is a measure of how tightly two modules are bound to each other?

  b)　Which is a measure of how closely the processes in a program are related?

5　Consider the following arithmetic expression　(10%)

    1+2*(3-4)

  a)　Rewrite this expression in postfix notation.

  b)　What kind of data structure is suitable for evaluating a postfix expression?

6　Consider the following 8-bit binary number　(10%)

    11001100

  What is the corresponding decimal number under each integer representation method below?

  a)　1's complement

  b)　signed magnitude

注意背面尚有試題

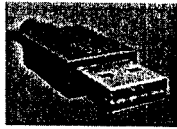淡江大學九十四學年度進修學士班轉學生招生考試試題

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准帶項目請打「V」

簡單型計算機

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7 Look at this picture　(10%)

a) Name the connector shown in the above picture.

b) As of 2005, what kind(s) of devices cannot be connected to a computer system via such connectors?

8 a) What is the value of `f(10)`, where the function `f` is given below?　(5%)
```c
int f(int n)
{
    int r=0;
    for (int x=1;x<=n;x++)
        for (int y=1;y<=x;y++)
            r+=y;
    return r;
}
```

b) What is the value of `f(10,20)`, where the function `f` is given below?　(5%)
```c
int g(int a,int b)
{
    return b==0? a: g(a,b-1)+1;
}
int f(int a,int b)
{
    return b==0? 0: g(a,f(a,b-1));
}
```

9 Draw the logic diagram for the Boolean function　(10%)
$$\overline{A} + BC$$
using AND, OR, and inverter gates.

10 Draw the binary tree that has the preorder traversal **ABDFGCEHI** and the inorder traversal **FDGBACHEI**, where the letters are the labels of the nodes of the binary tree.　(10%)