

科目：程式設計（以 C 和 C++ 為主）

適用：資工系二

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

本 試 題

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第 1 頁

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程式題（每題 10%）

1. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// for-loop
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    unsigned short points[] = { 1, 4, 2, 8, 5, 7 };
    unsigned short K = sizeof points / sizeof( points[0] );
    unsigned short i=0, max, max2, p, p2;
    for (max=points[i++]; i < K; i++)
    {
        if (max < points[i])
        {
            max = points[i];
            p = i;
        }
    }

    for (max2 = 0, i=0; i < K; i++)
    {
        if (max2 < points[i] && points[i] != max)
        {
            max2 = points[i];
            p2 = i;
        }
    }

    cout << p << '\t' << max << '\n';
    cout << p2 << '\t' << max2 << '\n';
    return 0;
}
```

2. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Type Conversion
#include <iostream>
using std::cout;

int main()
{
    int even = 0, odd = 0;
    char str[] = "TAICHUNG"; // 'A' == 65
    for (int i=0; i<12; i++)
        switch ( str[i] % 2 )
        {
            case 0:
                even++;
                break;
            case 1:
                odd++;
                break;
        }
    cout << "odd = " << odd << '\n'
        << "even = " << even << '\n';
    return 0;
}
```

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3. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Shorthand Notations
// Pointers and Arrays
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    int a[] = {1, 4, 2, 8, 5, 7 };
    *a *= *(a+1);
    cout << a[0] << endl;
    return 0;
}
```

4. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Conditional Operator
#include <iostream>
using std::endl;
using std::cout;

int main()
{
    int i;
    for (i=0; i<10; i++)
        cout << i << (i % 4 == 0 ? '\n' : '\t');
    return 0;
}
```

5. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// continue vs. break
#include <iostream>

int main()
{
    const int K = 6;
    int count = 0;
    int i, j;
    for (i=0; i<K; i++)
        for (j=0; j<K; j++)
        {
            ++count;
            if (i == j) break;
        }
    std::cout << count << std::endl;
    return 0;
}
```

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6. What will the following code display?

```
// Class Destructor
#include <iostream>

class CText
{
public:
    char* ptext;
    CText(const char* s)
    {
        ptext = new char[strlen(s)+1];
        strcpy(ptext, s);
    }
    ~CText()
    {
        std::cout << "Destructor called to release " << strlen(ptext)+1
                    << " bytes memory of " << ptext << std::endl;
        delete [] ptext;
    }
};

int main()
{
    CText a("Alpha"), b("Bravo");
    return 0;
}
```

7. What will the following code display?

```
// Recursive Function Calls
#include <iostream>

void septenary(int n)
{
    if (n >= 7 )
        septenary (n / 7);
    std::cout << n % 7;
}

int main()
{
    septenary (612);
    return 0;
}
```

8. What will the following code display?

```
// Pointers as Arguments to a Function
#include <iostream>

void swap(int* i, int k)
{
    int temp;
    temp = *i; *i = k; k = temp;
    return;
}

int main()
{
    int a = 4;
    int b = 19;
    std::cout << a << b << std::endl;
    swap(&a, b);
    std::cout << a << b << std::endl;
    return 0;
}
```

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9. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Function Overloading
#include <iostream>
using std::cout;

void star(int n)
{
    for (int i=0; i<n; i++)
        cout << '*';
}

void star(int n, char c)
{
    for (int i=0; i<n; i++)
        cout << c;
}

int main()
{
    star(5, 'A');
    star(6);
    return 0;
}
```

10. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Pass-by-Reference
#include <iostream>

void swap(int &i, int j)
{
    int temp;
    temp = i;
    i = j;
    j = temp;
    return;
}

int main()
{
    int a = 6;
    int b = 12;
    std::cout << a << b << std::endl;
    swap(&a, b);
    std::cout << a << b << std::endl;
    return 0;
}
```