



STAMFORD COLLEGE

SCHOOL OF COMPUTER SCIENCES DIPLOMA IN INFORMATION TECHNOLOGY

STC103 : STRUCTURED PROGRAMMING

Date : 16 March 2005 (Wednesday)

Time : 9.00 a.m. – 11.00 a.m.

Duration: 2 hours

Instructions to Candidates

Answer ALL questions.

Please ensure that this examination paper contains FIVE questions on THREE printed pages before you start the examination.

Books, papers and other written materials are not allowed to be brought into the examination hall. A candidate who violates the examination rules of Stamford College or commits a malpractice will be disqualified from the examination.

Candidates may use calculators provided the calculators give no printout, have no work display facilities, are silent and cordless.

Write your Examination Index Number on each page of your answer booklet.

ANSWER ALL QUESTIONS.

Question 1

(a) State whether the following identifiers are valid or invalid. If invalid, state the reason.

- (i) max-students
- (ii) area of circle
- (iii) cout
- (iv) student_name

(8 Marks)

(b) Describe the software development method.

(12 Marks)

(Total = 20 Marks)

Question 2

(a) Translate this pseudocode into a C++ code segment. Assume num is an integer.

```
Set invalid to 1
while invalid is a positive number
    read num
    if num is greater than zero and num is less than 11
        set invalid to negative one
    else
        print "invalid input!"
    endif
endwhile
```

(10 Marks)

(b) What is the output of the following nested loop?

```
For (I=1;I <= 2; I++){
    cout<<"\n";
    for (j=1;j<=2;j++)
    {
        for(k=1;k<=2;k++)
            cout<<"*";
    }
}
```

(10 Marks)

(Total = 20 Marks)

Question 3

(a) Briefly explain the following:

- (i) Modular programming
- (ii) Compiler
- (iii) Interpreter
- (iv) Source code

(8 Marks)

(b) Write a loop that will calculate the sum of every third integer, beginning with I=2, (i.e. calculate the sum 2+5+8+11+...) for all values of I less than 100.

- (i) Using do/while loop
- (ii) Using while loop
- (iii) Using for loop

(12 Marks)

(Total = 20 Marks)

Question 4

(a) SMART SHOP sells 4 new products. Write a program which displays the menu below and display the amount to be paid by the customer using switch statement.

- 1. SMART_A = RM59.99
- 2. SMART_B = RM69.99
- 3. SMART_C = RM89.99
- 4. SMART_D = RM99.99

Enter your choice: _____

Please pay : _____

(15 Marks)

- (b) Identify and correct the errors in the following program.

```
#include <iostream>
void main()
{
    int sum;
    cout<<"Enter your marks:\n";
    cin>>marks
    if (marks>50);
    {
        cout<<"You have passed in the exams";
    }
    else
        cout<<"You have failed in the exams;
}
}
```

(5 Marks)
(Total = 20 Marks)

Question 5

```
#include <iostream.h>
void main()
{
    int number,product;

    cout<<"Enter an integer value: ";
    cin>>number;
    product = fun(number);
    cout << "The output product by "<<<number<<"is " <<<product;
}

int fun(int x)
{
    int produce = 1;
    int count;
    for (count=2; count <= x;count++)
        produce *= count;
    return(produce);
}
```

- (a) Write the prototype for the function fun.

(2 Marks)

- (b) Give the output which will be printed by the program if the value of number read is 5.

(8 Marks)

- (c) Write a complete C++ program to find the sum and average of the first 10 numbers.
(Hint: you must use the concept of functions).

(10 Marks)

(Total = 20 Marks)

- END OF PAPER -