



**EASTERN UNIVERSITY, SRI LANKA**  
**DEPARTMENT OF MATHEMATICS**  
**FIRST EXAMINATION IN SCIENCE (2011/2012)**  
**FIRST SEMESTER (Dec/Jan,2013/2014)**  
**CS103 - INTRODUCTION TO PROGRAM DESIGN**  
**AND PROGRAMMING**

ANSWER ALL QUESTIONS

TIME: TWO HOURS

1)

- a. What do you mean by an “Algorithm” and define the “properties of an Algorithm”?
- b. Define the following terms:
  - I. Programme;
  - II. Programming;
  - III. Programmer;
  - IV. Flow chart;
  - V. Pseudocode.
- c. Represent the following problems using “Flow chart” and “Pseudocode”:
  - I. To find the sum of two (02) numbers;
  - II. To find the average of three (03) numbers;
  - III. To determine a given integer is “odd” or “even”;
  - IV. To find the maximum of two(02) numbers.

2)

- a. What do you mean by the following terms?:
  - I. Data;
  - II. Primitive Data Type.
- b. Briefly explain three types of programming errors.
- c. Write the output for the following code segments:
  - I. 

```
void main()
{
    int m=5;
    cout<<m;
    cout<<m--;
    cout<<m++;
    cout<<++m;
    cout<<--m;
    cout<<m%3; }

```

```

II. void main()
    {   int var=25;
        int *ptr;
        int **pptr;
        ptr=&ptr;
        ptr=&var;
        cout<<var<<"\t"<<*ptr<<"\t"<<**pptr<<"\n";
        **pptr=365;
        cout<<var<<"\n";
        *ptr=30;
        cout<<var<<"\n";
    }

```

- d. Write a C++ program to read a character and check whether the given character is "vowel" or "non-vowel".
- e. Write the Syntax for the switch statement and write an example for that.

3)

- a. By giving a suitable example, explain the difference between the "do-while" and "while" loop.
- b. Write a C++ program to find the sum of the given series using do-while loop:  
 $1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, \dots, 1/n$ , where n is a natural number.
- c. Write a C++ program to find the factorial of a positive integer.  
 Eg:  $3! = 3 * 2 * 1 = 6$
- d. Write a C++ program to print the following output:

```

*
**
***
****
*****

```

4)

- a. What is the difference between the two jump statements “break” and “continue”?
- b. Write a C++ program to read six (06) marks from the user, calculate the total marks, and print six (06) marks with total marks.
- c. What is the difference between the two parameter passing techniques “passing by value” and “passing by reference”?
- d. Write a function to swap values of two variables.  
void swap(int a, int b)
- e. Write a function to count the number of words in a string.  
void count(char S[])

\*\*\*\*\* End \*\*\*\*\*