



EASTERN UNIVERSITY SRI LANKA
DEPARTMENT OF MATHEMATICS

FIRST EXAMINATION IN SCIENCE – 2008/2009

FIRST SEMESTER (March/April, 2010)

**CS 103 – INTRODUCTION TO PROGRAMME DESIGN AND
PROGRAMMING**

(Proper and Repeat)

Answer all questions

Time: 2 Hours

- Q1. a.** Define the terms *algorithm*, *pseudo code* and *flowchart*.
- b.** What is a *run-time error*? Give examples of two different kinds of run-time errors.
- c.** Draw a flowchart for computing factorial of a given number N ($N!$);
where $N! = 1*2*3*4*.....*N$ and $0! = 1$.
- d.** Write an algorithm to the problem in Q1.(c).
- e.** Evaluate each of the following expressions, where in each case that $m = 25$
and $n = 7$:
- i. $m-8-n$
 - ii. $m=n=3$
 - iii. $m\%n$
 - iv. $m\%n++$
 - v. $m\%++n$
 - vi. $++m - n--$

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Q2. a. Explain the while loop and do..while loop in C++.

b. Describe the uses of break and continue statements in C++ programming.

c. Write the equivalent while & do..while loop statements for the for loop given below.

```
int sum=0;
for (int count=10, count >0, count--=2)
{
    sum+=count;
}
cout<< " the sum is: "<<sum;
```

d. Write a C++ programme using loop and if..else statement, that display the following pattern.

```
* * * * *
*   *   *
* * * * *
*   *   *
* * * * *
```

Q3. a. Define the terms 'function' and 'function overloading'.

b. Explain the parameter passed by value and by reference with aid of suitable examples.

c. What is wrong with the following declaration? Write the corrected function declaration for myFunction.

```
int myFunction(int a,int b=0, int c);
```

d. Write the following functions in C++:

i. Write a function `max(int, int)` that returns the largest of two given numbers.

ii. Write a function `max(int, int, int, int)` that returns the largest of four given numbers.

ii. Write a function `max(int, int, int, int)` that uses the function `max(int, int)` to find and return the largest of four given numbers.