



EASTERN UNIVERSITY, SRI LANKA
FIRST EXAMINATION IN SCIENCE – 2012/2013
SECOND SEMESTER (August / September, 2015)
CS 104 – OBJECT ORIENTED PROGRAMMING TECHNIQUES
(Proper & Repeat)

Answer all questions

Time: 2 Hours

Q1.

- a) State what is meant by *Object Oriented Programming*.
- b) List any five advantages of "*Object Oriented Programming*".
- c) Define the following terms regarding the Object Oriented Methodology:
 - i. Data Abstraction;
 - ii. Data Encapsulation.
- d) Briefly describe the following terms in C++ with suitable examples:
 - i. recursion;
 - ii. iteration.

Q2.

- a) State the use of *destructor* and give its general syntax.
- b) Briefly describe the following type conversions in C++ with suitable examples:
 - i. Implicit conversion;
 - ii. Explicit conversion.

- c) Briefly describe the types of constructors.
- d) Consider the following C++ code:

```
#include<iostream.h>
void Print ( )
{
    for (int K=1 ; K<=60 ; K++) cout<< "- " ;
    cout<<endl ;
}
void Print (int N)
{
    for (int K=1 ; K<=N ; K++)
        cout<<"* " ;
    cout<<endl ;
}
void Print (int A, int.B)
{
    for (int K=1. ;K<=B ;K++) cout <<A*K ;
    cout<<endl ;
}
void Print (char T, int N)
{
    for (int K=1 ; K<=N ; K++) cout<<T ;
    cout<<endl;
}
void main ( )
{
    int U=9, V=4, W=3;
    char C='@' ;
    Print (C,V) ;
    Print (U,W) ;
}
```

- i. Write the output of the above C++ code.
- ii. What is the feature of Object Oriented Programming used in the above C++ program? Explain.

Q3.

- a) What is meant by an *Operator Overloading*?
- b) Write a sample C++ program for overloading the binary + operator.
- c) Consider the following integer variables with their initial values:

A=5; B=7; C=8; D=12;

Suppose that the following assignments are performed:

- i. A += B++ + ++C;
- ii. D = ++D + D++;

Write the values that the variables would have after the execution.

- d) Find the output of the following C++ program:

```
#include<iostream.h>
void main()
{
    int a[] = {10,20,30,40,50};
    int i;
    for (i=0;i<5;i++)
    {
        cout<<"\nelement is "<<*(i+a)<<" "<<*(a+i)<<" "<<i[a]<<" "<<a[i];
    }
}
```

Q4.

- a) What is meant by *polymorphism*? Explain clearly.
- b) Briefly describe the following types of *polymorphism*:
- Static polymorphism;
 - Dynamic polymorphism.
- c) Briefly describe the following types of *inheritance*:
- Multiple inheritance;
 - Multilevel inheritance;
 - Hierarchical inheritance.
- d) Consider the following C++ program, find the errors and underline them. Then correct and rewrite the entire program again:

```
include <iostream>
void main ( )
{
    char c, string [ ] = "Excellence Overload";
    for (int i=0; String [ i ] != '\0'; i -- )
    if (String [i] == ' ')
        cout<<endl;
    else
    {
        c=toupper(String[i]);
        cout>>c ;
    }
}
```