BCS-031

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)
Term-End Examination

05740   December, 2017

BCS-031 : PROGRAMMING IN C++

Time : 3 hours   *Maximum Marks : 100*
(Weightage : 75%)

Note : *Question no. 1 is **compulsory** and carries 40 marks.*
*Attempt any **three** questions from the rest.*

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1. (a) What do you mean by Abstraction and Encapsulation ? How are the two terms interrelated ?   4

    (b) What is a Reference Variable ? What is its usage ?   4

    (c) Identify the errors in the following code segment :   4

    int main( )
    {
        cout << "Enter two numbers";
        cin >> num >> auto;
        float area = length * breadth;
    }

(d) Why will the function given in the following code fragment not work ? What should be done to make it work ? *4*

```
int main( )
{
    float sum (float, float);
        ⋮
}
void calc(void)
{
    float x, y, s;
    cin >> x >> y
    s = sum (x, y);
        ⋮
}
```

(e) What is a Friend Function ? What is the significance of friend functions ? *4*

(f) What do you mean by Static Data Members of a class ? Explain the characteristics of static data members. *4*

(g) What do you understand by a Default Constructor ? How is a default constructor equivalent to a constructor with default arguments ? *4*

(h) What is Function Overloading ? Compare default arguments with function overloading. *4*

(i) When should one derive a class publicly or privately ? Give a suitable example in support of your answer. *4*

(j) What are Iterators ? List the five types of iterators supported by STL in C++. *4*

2. (a) How does the functioning of a function differ when

(i) an object is passed by value ?

(ii) an object is passed by reference ? *7*

(b) What is Operator Overloading ? List the operators which cannot be overloaded. Give reasons behind it. *7*

(c) What is 'this' Pointer ? Explain the significance of 'this' pointer with the help of an example. *6*

3. (a) What is the difference between call-by-value and call-by-reference in a user defined function in C++ ? Give an example to illustrate the difference. *10*

(b) What is Message Passing ? Explain how message passing is used in C++ programming with example. *10*

4. (a) What is the difference between overloading and overriding concepts in C++ ? Explain the usage of these concepts with suitable example code in C++.   *10*

   (b) What is an Exception in C++ ? Explain how exception handling is done in C++ with the help of a program. What will happen if exception is thrown outside of a try block ? Give reasons for such a happening.   *10*

5. (a) Write a program in C++ to create a class Employee with basic data members such as name, address, age. Create a class Part_time employee which inherits from the Employee class. Part_time class should have a function to display the name, address and payment of the part-time employee.   *10*

   (b) Write a program in C++ to simulate the environment of a simple calculator.   *10*

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