COMP 3 – 2 (RC)

S.E. (Comp.) (Semester – III) (RC) Examination, May/June 2013
BASICS OF C++

Duration: 3 Hours | Total Marks: 100

Instructions *: 1) Attempt* ***any five*** *questions by selecting at least* ***one*** *from* ***each*** *Module.*
2) Assume suitable data ***if necessary****.*

MODULE – I

1. a) Compare and contrast structured programming v/s object oriented programming. 5
   b) What is the difference between local and static variables ? 2
   c) With the help of an example explain the significance of namespaces in C++. 5
   d) What are strings ? Write an interactive program to check whether a given string is a palindrome or not ? What happen if the end of string is missing ? 8
2. a) Illustrate the difference between do-while and while control statements. 4
   b) What is type casting ? What are explicit and implicit type conversions ? 8
   c) Consider the following two statements : 8
   int x = 15, y = 12, z = 6, m;
   m = x – y – z;
   Using precedence of operators explain the execution of the expression.

MODULE – II

3. a) How do you initialize two dimensional array ? Explain with an example. 8
   b) Write a function to add two numbers using pointers. 8
   c) What is the difference between a C++ pointer and a reference ? 4
4. a) Write a program to compute factorial of a number using : 10
   i) Iteration ii) Recursion
   Compare the two methods.
   b) Write code to illustrate the concept of passing 2D array to a function. 8
   c) Why does the array out of bound situation arise ? 2

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MODULE – III

5. a) Explain the call by reference with reference parameter passing technique in C++ with the help of an example. Write a C++ program to exchange the values of two integers using reference parameters. 6

   b) Write a C++ program to read and process employee data using an array of structures. Each employee data should include employee name, employee id, designation, date of birth and monthly salary. Read the data for *n* employees and print the names and monthly salaries of all the managers in the company. 8

   c) What do you mean by default input parameter list functions ? Explain with an example. 6

6. a) Explain how enumerated data types can be used to create symbolic constants in C++. 4

   b) What mechanism does C++ provide to automatically initialize an object when it is created ? Explain with an example. 4

   c) Write a C++ program to implement complex numbers using classes. Implement member functions for reading and display. Overload the + and * operators for addition and multiplication of two complex numbers. 8

   d) Explain the following object-oriented principles : 4

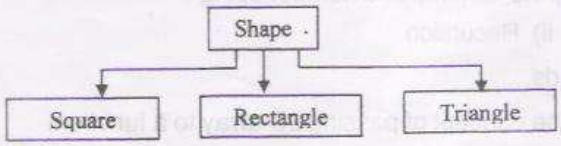
      i) Data abstraction

      ii) Encapsulation.

MODULE – IV

7. a) State and explain the various class relationships with the help of suitable examples. 6

   b) Write C++ classes to implement the following inheritance. Provide functionality to read the dimensions and calculate the perimeter for each shape. 8



   c) What is multiple inheritance ? Explain the syntax of multiple inheritance in C++ with a suitable example. 6

8. a) What is the output of the following program ? 2

```
#include<iostream.h>
class Base
{
  int x;
public:
  Base() {x = 0; cout <<"Default base\n";}
  Base(int y) {x = y; cout <<"Overloaded base\n";}
  void Show() { cout <<"Base shows "<<x<<endl;}
};
class Derived : public Base
{
  int y;
public:
  Derived() {y = 0; cout <<"Default derived\n";}
  Derived(int x) : Base(x) {y = x; cout <<"Overloaded derived\n";}
  void Show() {cout <<"Derived shows "<< y << endl;}
};
int main()
{
  Derived obj(4);
  Base*obj_ptr=&obj;
  obj_ptr->Show();
  return 0;
}
```

b) Distinguish between early binding and late binding. How is late binding achieved ? Explain. 6

c) Explain dynamic memory allocation in C++. How will you allocate and free memory for an array of integer pointers ? 6

d) What are exceptions ? Write a C++ program to read an array of integers from the user and raise an exception if the user accesses the array out of bounds. 6