Repeat 2016

COMP 3 – 2 (RC)

S.E. (Comp.) (Semester – III) (RC) Examination, May/June 2014
BASICS OF C++

Duration : 3 Hours | Total Marks : 100

Instructions : *1) Answer **any five** questions selecting at least **one** from **each** Module.*
*2) Make **necessary** assumptions **if** required. Clearly state **any** such assumptions made.*

MODULE – I

1. a) What the benefits are of object oriented programming ? **2**

   b) Write a program to swap two numbers without using temporary variable. **6**

   c) Rewrite the following code fragment so that it uses a "do...while..." loop to accomplish the same task. **6**

```
int n;
cout << "Enter a non-negative integer: ";
cin >> n;
while (n < 0)
{
cout << "The integer you entered is negative." << endl;
cout << "Enter a non-negative integer: ";
cin >> n;
}
```

   d) Write a program to calculate Fibonacci series of n numbers where n in the input. **6**

P.T.O.

2. a) Explain increment and decrement operators in C++ with the help of an example. 4

   b) What is the output when the following code fragment is executed ? 6

```
int n, k = 5;
n = (100 % k ? k + 1 : k - 1);
cout << "n = " << n << " k = " << k << endl;
```

   c) Write a program to print the sum and product of n inputted numbers. 6

   d) How does a constant defined by "const" differ from a constant defined by the preprocessor statement "#define" ? 4

MODULE – II

3. a) Explain the following pointer declaration in C++ 4

   i) &i

   ii) *(&j)

   iii) *j

   iv) **j

   b) Write a program which reads 2 strings S1 and S2 and then performs the following : 8

   i) Find length of S1 and S2

   ii) Compare S1 and S2

   iii) Copy string S1 to third string.

   c) Explain any two of the following by providing relevant code segment : 8

   i) Local, global and static variables

   ii) Passing 2D array to function

   iii) Returning an array from a function.

4. a) What is the difference between C++ pointers and a reference ? Give examples. 4

   b) Write a function named "eliminate_duplicates" that takes an array of integers in random order and eliminates all the duplicate integers in the array. The function should take two arguments :

   i) an array of integers;

   ii) an integer that tells the number of cells in the array.

The function should not return a value, but if any duplicate integers are eliminated, then the function should change the value of the argument that was passed to it so that the new value tells the number of distinct integers in the array. **8**

c) Give an example to explain what is recursive function ? What are the advantages and disadvantages of recursive functions ? **8**

MODULE – III

5. a) Distinguish between structure and classes. Also give the advantage of each. **4**

b) Describe what is meant by the term method overloading and comment on the importance of method signatures in determining which method is overloaded. Using code illustrate method overloading. **8**

c) Write a program which defines two classes and then calculates the product of the first class private data with the second class private data. **8**

6. a) Explain the use of constructor and destructors in C++ with suitable example. **4**

b) Consider a Fruit Basket class with no. of Apples and no. of Mangoes as data members. Overload the '+' operator to add two objects of this class. **8**

c) What are Inline functions ? Write an inline function for finding the perimeter of a rectangle. **8**

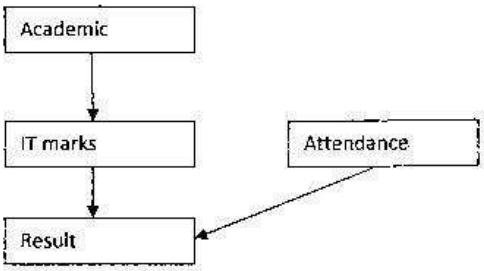
MODULE – IV

7. a) Write a program to define a class student with data members student name, age and roll number. The student class should inherit person class and exam class. The data members of person class are height, weight and age. Whereas, the data members of exam class are Roll no., subject and marks. Define constructors and destructors for all the classes. Define function showdata () at each class. Write a main program to display the values of data members. **9**

b) Why do we use 'protected mode' ? Explain with an example. **4**

c) Explain dynamic memory allocation in C++. How will you allocate and free memory for an array of integer pointers ? Write the program for the same. **7**

8. a) Write a C++ program to implement the following : 6



Assume appropriate data.

b) How is an exception handled in C++ ? 4

c) Write a C++ program for calculating the area of rectangle and circle using run-time polymorphism. 6

d) What is an abstract class ? Illustrate. 4