S.E. (Comp.) Semester – III (RC) Examination, Nov./Dec. 2015
BASIC of C++

Duration : 3 Hours | Total Marks : 100

Instructions : *1) Answer **five** questions by selecting atleast **one** from **each** Module.*

*2) Write the code using **C++** language.*

*3) Make appropriate assumptions **wherever** necessary.*

Module – I

1. a) Explain the concept of object oriented programming with an example. 4

   b) Briefly explain Johnstons Rules for programmers. 6

   c) Write a C++ program to compute the following value of the function. 6

   $f(x) = 5x^2 + 2x + 3 \quad ; \quad x < 2$

   $= x^2 + 4x \quad ; \quad x = 2$

   $= 7x + 40 \quad ; \quad x > 2$

   d) Explain the concept of name space in a C++ program with the help of a suitable example. 4

2. a) How does a constant defined by "const" differ from the constant defined by the preprocessor statement # define. 3

   b) What do you mean by precedence of operators ? Give the precedence of Arithmetic, Relational and logical operators in C++. Solve

   $5 + 8 < 14 - z \;||\; 6 > 3$

   using the above precedence. 7

c) Write a C++ program for addition of two matrices. 6

d) Write a C++ program to output the following pattern. 4

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

Module – II

3. a) Explain the address operator and show that it can be used with pointers. 4

b) Write a C++ program to find the GCD of two numbers using functions. 5

c) Explain different arithmetic operations that can be performed on pointer variables with the help of an example. 6

d) Write a C++ program to swap two numbers using pointers. 5

4. a) Explain the advantage of using functions. 4

b) Write a C++ program to find the largest element in an array using functions. 6

c) Explain the concept of call by reference with the help of a C++ program. 4

d) Explain with examples the following with respect to variables.

1) local 2) static 3) global. 6

Module – III

5. a) Write a C++ program that will create a user defined data type called color that will accept the colors pink, blue, red and yellow. What are these data types called ? Explain the internal representation of these data types. 5

b) What is the difference between a structure and a class ? Create a class called student which will accept details of students. Let the birthday of the student have a structure DOB. Write a main function that will accept the details of 5 students. 7

c) What is the output of the following program. 8

```
# include < iostream >
# include < conio.h >
using namespace std;
int fun (int &, int &);
int main ( ) {
int a = 50, b = 70;
int s = fun (a, b);
cout < < "S = " < < S;
}
int fun (int & a, int & b) {
int x = a + a;
int y = x + b;
return y ;
getch ( ) ;
return 0;
}
```

What method has been used to pass values to function in the above program ? What are the other methods of passing values to functions ? Explain by modifying the above program.

6. a) What are inline functions ? Explain their use, advantages and limitations with a C++ program. 6

b) Write a C++ program to implement a complex number class with functions to accept complex numbers and display them. Overload the + and * operators to perform complex numbers addition and multiplication. 8

c) Explain the access specifiers in C++ with suitable program examples. 6

Module – IV

7. a) What is inheritance in object oriented programming ? Describe the conversions of visibility mode of private, public and protected members of a class when classes are inherited privately and publicly. 8

   b) What happens if a derived class constructor is not present in the class ? Explain with a C++ program. 5

   c) Explain the exception handling model in C++. 6

   d) What is a purely virtual function ? 1

8. a) How can allocation of memory for 2D and 3D arrays be done in C++ ? Explain with programs. 7

   b) What is early and late binding ? Explain how they are achieved. 7

   c) Define a class in C++ to accept basic details of a person (i.e. name, age). Write another class student that inherits this class and has its own additional features. 6
