Code No: R161215 **R16** SET - 1

I B. Tech II Semester Regular Examinations, April/May - 2017
OBJECT ORIENTED PROGRAMMING THROUGH C++
(Com. to CSE, IT)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**) 2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) What is a class? Give an example. (2M)
   b) Define scope and lifetime of a variable. (2M)
   c) What is a virtual base class? (2M)
   d) What is a dereferencing Operator? (2M)
   e) What features of C++ enable polymorphism? (2M)
   f) What is an iterator in STL? (2M)
   g) What is a copy constructor? (2M)

PART -B

2. a) List the drawbacks of conventional programming. Explain how object oriented programming overcome them. (7M)
   b) Explain about polymorphism and encapsulation. (7M)

3. a) What are recursive constructors? Explain with an example. (7M)
   b) Define inline function. Write a C++ program for finding the area of a triangle using inline functions. (7M)

4. a) What is inheritance? Present the advantages and disadvantages of inheritance. (7M)
   b) Write C++ Program to overload + operator to add two matrices. (7M)

5. a) What is a virtual destructor? Explain with an example. (7M)
   b) Explain the role of this pointer in C++ with a programming example. (7M)

6. a) Write a C++ program to add two integers, two floating point numbers and two complex numbers using class templates. (7M)
   b) Explain how to catch multiple exceptions in C++. (7M)

7. a) Write a function template for finding the minimum value in an array. (7M)
   b) Discuss about STL programming model. (7M)
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PART –A

1. a) Define a class and an object. (2M)
   b) With an example, explain the purpose of scope access operator. (2M)
   c) List some C++ operators that cannot be overloaded. (2M)
   d) How to declare a pointer in C++? (2M)
   e) What is the primary difference between early binding and late binding? (2M)
   f) What is an algorithm in STL? (2M)
   g) Write the purpose of a destructor. (2M)

PART –B

2. a) List the similarities and differences between C and C++. (7M)
   b) Write about inheritance and abstraction. (7M)

3. a) What is function overloading? What are the principles of function overloading? (7M)
   b) Write C++ Program that demonstrates the usage of static data member and static member function. (7M)

4. a) Explain hybrid inheritance with a C++ example. (7M)
   b) Explain the concept of Data hiding in C++, with suitable examples. (7M)

5. a) What is a virtual base class? Why it is important to make a class virtual? (7M)
   b) Write a C++ program that declare and use pointer to a class. (7M)

6. a) Explain the concept of Class Template with overloaded operators. (7M)
   b) Write a C++ program that implements Bubble Sort using function templates. (7M)

7. a) Write a C++ program to insert elements into a map. (7M)
   b) Explain different ways of initializing a vector with programming examples. (7M)
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Code No: R161215 **R16** SET - 3

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PART –A

1. a) List some operators in C++, which are not present in C. (2M)
   b) What is a constructor? (2M)
   c) What is a friend function? (2M)
   d) Define namespace. (2M)
   e) How is polymorphism achieved at runtime? (2M)
   f) What is a list in C++ STL? (2M)
   g) What happens if we declare all member functions as private in a class? (2M)

PART –B

2. a) Explain the key concepts of Object Oriented Programming. (7M)
   b) Briefly write about the evolution of C++. (7M)

3. a) Write C++ program to find the area of a circle, rectangle and triangle using function overloading. (7M)
   b) What is a constructor? Write different rules associated with declaring constructors. (7M)

4. a) What is code reusability? Explain different C++ features that enable reusability. (7M)
   b) Write about operator overloading in C++ with an example. (7M)

5. a) What is dynamic binding? How it is different from static binding? List some advantages of dynamic binding over static binding. (7M)
   b) List and explain the rules associated with virtual functions. (7M)

6. a) Define template. What is the need for templates in programming? Write C++ code that declares a Template class. (7M)
   b) Write a C++ program that catches any math exception. (7M)

7. a) Explain the components of Standard Template Library (STL). (7M)
   b) Write a C++ program that fills a vector with random numbers. (7M)
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PART –A

1. a) Write C++ code that reads two numbers from user and prints their sum. (2M)
   b) List different access specifiers in C++. (2M)
   c) Define an abstract class. (2M)
   d) What is a pure virtual function? (2M)
   e) List the keywords used in exception handling along with their purpose. (2M)
   f) What is a map in STL? (2M)
   g) What are anonymous objects in C++? (2M)

PART –B

2. a) Present the structure of C++ program. Explain different elements in it. (7M)
   b) Write C++ code that defines a class and declares an array of objects to that class. (7M)

3. a) Explain about default and parameterized constructors with suitable examples. (7M)
   b) Write C++ program to add two complex numbers using friend functions. (7M)

4. a) What are different types of inheritance supported by C++? Give an example for each. (7M)
   b) Write a C++ program to overload increment operator. (7M)

5. a) Write a C++ program to demonstrate pointers to base and derived classes. (7M)
   b) Discuss about virtual functions with a C++ example. (7M)

6. a) What is a template function? How to overload template functions in C++? (7M)
   b) How to handle exceptions that arise in constructors? Explain with an example. (7M)

7. a) Explain about different types of containers. (7M)
   b) Write a C++ program that erases all elements in a list using iterators. (7M)
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