

**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

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- 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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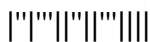
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**PART -A**

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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**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 (7M) function overloading.
- 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 (7M) advantages of dynamic binding over static binding.
- 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 (7M) that declares a Template class.
- 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)

