

II B. Tech I Semester Regular/Supplementary Examinations, January-2023**OBJECT ORIENTED PROGRAMMING THROUGH C++**

(Com to CSE, IT)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unitAll Questions carry **Equal** Marks

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## UNIT-I

- 1 a) Compare structured programming and object oriented programming paradigm. [7M]  
b) What are the key concepts are of object oriented programming. Explain in detail. [7M]

## OR

- 2 a) What is the need of data types in C++? Describe different data types along with their representations and size in C++. [7M]  
b) Explain the advantages of object oriented programming. [7M]

## UNIT-II

- 3 a) What are objects and how they are created from class? Explain with a C++ program. [7M]  
b) In which order the constructors and destructors are executed? Explain with an example. [7M]

## OR

- 4 a) What are the different ways to define member functions of a class? What is the role of scope resolution operator in the definition of member function? [7M]  
b) Why do we need Nested classes in C++ programming? Write a C++ program to demonstrate the necessity of nested classes. [7M]

## UNIT-III

- 5 a) Write a C++ program to illustrate the importance of overloading Binary operator '+' for adding two complex numbers. [7M]  
b) Why do we use virtual base class in C++? Give explanation with an example. [7M]

## OR

- 6 a) Give the rules for operator overloading. Discuss an example. [7M]  
b) What is the significance of inheritance? Explain various types of inheritance with suitable example. [7M]



## UNIT-IV

- 7 a) Define Pointer. How to declare, initialize and access pointers in C++? Explain. [7M]  
b) What is Function template? Can a class member function template be virtual? Explain [7M]

OR

- 8 a) How do you declare a pointer to an object in C++? Explain with an example program. [7M]  
b) Explain the purpose of Virtual destructors in C++ with a sample program. [7M]

## UNIT-V

- 9 a) Explain in detail about the four important components of C++ Standard Template Library. [7M]  
b) Write a C++ program to insert elements into a list. [7M]

OR

- 10 a) How are templates different from macros? Explain. [7M]  
b) How many associative containers are provided by C++? Explain. [7M]



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UNIT-I

- 1 a) Compare C and C++ programming languages. [7M]
b) Explain the key concepts of Object oriented programming languages. [7M]

OR

- 2 a) Explain different operators in C++ with an example programs. [7M]
b) Difference between object oriented programming and procedure oriented programming. [7M]

UNIT-II

- 3 a) Write a C++ program to demonstrate overloading member functions. [7M]
b) Write a program to add two complex numbers using object as arguments. [7M]

OR

- 4 a) Explain the following: (i) C++ Access specifiers (ii) Characteristics of Destructor [7M]
b) What is Constructor? Explain types of Constructor with example. [7M]

UNIT-III

- 5 a) Explain various forms of inheritance supported by C++. [7M]
b) Write a C++ program to overload assignment operator. [7M]

OR

- 6 a) Write a C++ program to overload the binary operator '+' to Concatenate two strings. [7M]
b) Explain about Abstract classes and virtual base classes in C++ programming. [7M]

UNIT-IV

- 7 a) Describe the features of pointer variable. Write a C++ program to demonstrate the significance of this pointer. [7M]
- b) Write the differences between virtual and pure virtual functions in C++. [7M]

OR

- 8 a) Specify the rules for defining virtual functions and explain the same with a C++ program. [7M]
- b) What are the differences between pointers to constants and constant pointers? [7M]

UNIT-V

- 9 a) With an example, explain various types of container classes in C++. [7M]
- b) Write a program using a try block to detect and throw an exception if the conditions "divide-by-zero" occurs. [7M]

OR

- 10 a) Write a program to create a template function for bubble sort and demonstrate the sorting of integers? [7M]
- b) Write a C++ program for handling exceptions with multiple catch. [7M]



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## UNIT-I

- 1 a) Define object oriented programming? Explain its key features. [7M]  
b) Explain the concept of object oriented paradigm with an example application of your choice. [7M]

## OR

- 2 a) Compare and contrast the features of structured programming and object oriented programming paradigms. [7M]  
b) Differentiate C and C++ programming languages with suitable examples. [7M]

## UNIT-II

- 3 a) What are objects and how they are created from class? Explain with a C++ program. [7M]  
b) Explain copy and default constructors with an example. [7M]

## OR

- 4 a) What is the need of passing objects as arguments? Discuss different ways to pass objects as arguments to a function. [7M]  
b) Write a program to add two complex numbers using object as arguments. [7M]

## UNIT-III

- 5 a) What is the significance of inheritance? Explain various types of inheritance with suitable example. [7M]  
b) Write a C++ program to illustrate the importance of overloading Binary operator '+' for adding two complex numbers. [7M]

## OR

- 6 a) What are Virtual classes? Explain the need for Virtual classes with a suitable example. [7M]  
b) Write the rules of overloading operators in C++. [7M]



## UNIT-IV

- 7 a) What is Function template? Can a class member function template be virtual? Explain [7M]  
b) Define Pointer. How to declare, initialize and access pointers in C++? Explain. [7M]

OR

- 8 a) What is a class pointer? What is the size of an object pointer? Give explanation. [7M]  
b) Explain about virtual functions in C++ with a program. [7M]

## UNIT-V

- 9 a) Explain various keywords related to exception handling in C++ . [7M]  
b) Write a C++ program to illustrate class templates and function templates. [7M]

OR

- 10 a) Write short notes on the following features of C++ programming: [7M]  
(i) Sequence containers (ii) Iterators (iii) Maps  
b) How many associative containers are provided by C++? Explain. [7M]



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UNIT-I

- 1 a) Discuss the unique key features of object oriented programming. [7M]
b) Explain different operators in C++ with an example programs. [7M]

OR

- 2 a) Explain in detail about Data abstraction and polymorphism features of OOP. [7M]
b) Discuss the limitations of conventional programming and explain how they can be overcome through OOP. [7M]

UNIT-II

- 3 a) Describe the special characteristics of constructors and destructors. Also give their order of execution. [7M]
b) What do you mean by an object in C++? How to declare an object? Write a C++ program to initialize an object through parameterized constructors. [7M]

OR

- 4 a) Explain about: (i) Nested Classes (ii) Anonymous Objects [7M]
b) In which order constructor and destructors are executed? Explain with an example. [7M]

UNIT-III

- 5 a) What is inheritance? List the different types of inheritance and explain how it encourages reusability and sharing? [7M]
b) Explain the significance of operator overloading with a C++ program. [7M]

OR

- 6 a) What are Virtual classes? Explain the need for Virtual classes with a suitable example. [7M]
b) Write a C++ program to illustrate the significance of defining object as a class member. [4M]
c) Write about Abstract classes in C++.



UNIT-IV

- 7 a) Write the differences between virtual and pure virtual functions in C++. [7M]
b) Explain the purpose of Virtual destructors in C++ with a sample program. [7M]

OR

- 8 a) How do you declare a pointer to an object in C++? Explain with an example program. [7M]
b) What is virtual base class? Write a C++ program illustrating virtual base Classes? [7M]

UNIT-V

- 9 a) Write a program to create a template function for bubble sort and demonstrate the sorting of integers? [7M]
b) With an example, explain various types of container classes in C++. [7M]

OR

- 10 a) "Can we write multiple catch statements for a try block in C++ program?" Justify your answer with proper explanation and suitable examples. [7M]
b) Write a generic C++ program to sort any given n numbers using template. [7M]

