Total No. of printed pages = 3

CSE 181302

Roll No. of candidate | | | | | | | | | |

2021

B.Tech. 3rd Semester End-Term Examination

CSE

OBJECT ORIENTED PROGRAMMING USING C++

(New Regulation w.e.f 2017-18) &

(New Syllabus w.e.f 2018-19)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. Answer the following : (10 × 1 = 10)

(i) If class A is a friend of B, then B doesn't become a friend of A automatically.

(a) TRUE (b) FALSE

(c) Can be true and false (d) Can not say

(ii) A class is made abstract by declaring at least one of its functions as?

(a) abstract classes (b) pure virtual function

(c) abstract functions (d) Interface

(iii) Which stream class is to only write on files

(a) of stream (b) ifstream

(c) fstream (d) iostream

(iv) How can we make a class abstract?

(a) By declaring it abstract using the static keyword

(b) By declaring it abstract using the virtual keyword

(c) By making at least one member function as pure virtual function

(d) By making all member functions constant

[Turn over

(v) Destructor has a same name as the constructor and it is preceded by?

(a) ! (b) ?

(c) ~ (d) $

(vi) Like constructors, can there be more than one destructors in a class?

(a) Yes (b) No

(c) May Be (d) Cant Say

(vii) What is meant by multiple inheritance?

(a) Deriving a base class from derived class

(b) Deriving a derived class from base class

(c) Deriving a derived class from more than one base class

(d) None of the mentioned

(viii) Which of the following in Object Oriented Programming is supported by Function overloading and default arguments features of C++.

(a) Inheritance (b) Polymorphism

(c) Encapsulation (d) None of these

(ix) Which keyword is used to handle the expection?

(a) Try (b) Throw

(c) Catch (d) None of the above

(x) Which among the following is not true for polymorphism?

(a) It is feature of OOP

(b) Ease in readability of program

(c) Helps in redefining the same functionality

(d) Increases overhead of function definition always

2. (a) How exceptions can be handled in C++? Explain with block diagrams. (5)

(b) What is the difference between overloading and overriding? Give examples. (5)

(c) What do you mean by Generic classes? Discuss with an example. (5)

3. (a) Write a C++ program to read the content of a file 'poem.txt' and find the number of lines, blank space and alphabets present in that file. (5)

(b) Write a program to overload the '*' operator to perform the multiplication of two complex numbers. (5)

(c) Explain about `Booch Models". (5)

4. (a) Differentiate between object oriented and procedural programming languages. (5)

(b) Explain the various types of inheritance with diagrams. (5)

(c) Write about "Model-view-controller pattern". (5)

5. (a) What do you mean by dynamic binding? How is it useful in OOP? (5)

(b) What is template in C++? Differentiate between class templates and function templates. (5)

(c) What are the various file opening modes? Explain. (5)

6. (a) What are data types? Write the pre-defined data types in C++. (5)

(b) Explain the keywords *private, public and protected,* in context of inheritance. (5)

(c) What is a Virtual function? Why do we need virtual function? (5)

7. (a) Can you have more than one constructor in a class? If yes, explain the need for such a situation. (5)

(b) Describe the importance of a destructor. Explain its uses with the help of an example. (5)

(c) What is a friend function? What are the merits and demerits of using friend function? (5)

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CSE

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(New Regulation & New Syllabus)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Question No. 1 is compulsory and answer any *four* from the rest.

1. Answer the following questions : (10 × 1 = 10)

(i) #include<userdefined.h>

Which of the following is the correct syntax to add the header file in the C++ program?

(a) #include<userdefined>

(b) #include "userdefined.h"

(c) <include> "userdefined.h"

(d) both (a) and (b)

(ii) Which type of memory is used by an Array in C++ programming language?

(a) Contiguous (b) None-contiguous

(c) Both (a) and (b) (d) Not mentioned

(iii) Features not available in C++ object oriented programming is

(a) Virtual destructor (b) Virtual constructor

(c) Virtual function (d) All

(iv) Features not available in C++ object oriented programming is

(a) Virtual destructor (b) Virtual constructor

(c) Virtual function (d) All

[Turn over

(v) Which of the following is an abstract data type?

(a) Class (b) Int

(c) String (d) Double

(vi) What is default access specifier for data members or member functions declared within a class without any specifier, in C++?

(a) Private (b) Protected

(c) Public (d) Depends on Compiler

(vii) Destructor has a same name as the constructor and it is preceded by?

(a) ! (b) ?

(c) ~ (d) $

(viii) What is used to read from the console in C++?

(a) cin (b) scanf

(c) read (d) getline

(ix) Which of the following is true?

(a) All objects of a class share all data members of class

(b) Objects of a class do not share non-static members. Every object has its own copy

(c) Objects of a class do not share codes of non-static

(d) None of these

(x) Which of the following feature is also known as run-time binding or late binding?

(a) Dynamic typing (b) Dynamic loading

(c) Dynamic binding (d) Data hiding

2. (a) What is function overloading? Write a program in C++ to add two integers and two floating point numbers with the help of function overloading. (2+5=7)

(b) Differentiate between with suitable examples:

(i) Function overloading and function overriding

(ii) Static binding and dynamic binding. (2 × 4 = 8)

3. (a) Define a class named 'Bank Account' to represent following members:
Data members:

Account Number

Name of Depositor

Account Type

Balance Amount

Member functions:

Initialize members

Deposit Amount

Withdraw Amount

Display Balance

Write a C++ program to test the Bank Account class for 5 customers. (8)

(b) What is a friend function? Write a program to calculate the sum of two numbers and display the result using friend function. (2+5=7)

4. (a) Write a program in C++ to demonstrate the use of abstract classes. (7)

(b) What is an interface? Differentiate between class and interface with suitable examples written in C++. (2+6=8)

5. (a) What is an exception? Illustrate how exceptions are handled in C++. (2+5=7)

(b) What is a design pattern? Explain about the different types of design patterns used in software design. (2+6=8)

6. (a) Explain the use of new and delete operator for memory management with a suitable example in C++. (6)

(b) Write short notes on (*any three*):

(i) Access specifiers

(ii) Multiple Inheritance

(iii) Abstract data type (ADT)

(iv) Virtual function. (3 × 3 = 9)

7. (a) What do you mean by the term generic programming? (2)

(b) Write a program in C++ to add two numbers using class template. (6)

(c) What is a stream? Describe briefly the features of I/O system supported by C++. (2+5=7)

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CSE 181302

Roll No. of candidate 22071000704

2023

B.Tech. 3rd Semester End-Term Examination

Computer Science and Engineering

OBJECT ORIENTED PROGRAMMING USING C++

(New Regulation and New Syllabus)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No. 1 and any *four* from the rest.

1. Choose the most appropriate choice to answer the following : (10 × 1 = 10)

(i) C++ can be used as an procedural language as well as an object oriented language
(a) True (b) False

(ii) A function that changes the state of the cout object is called *a(n)* _____.
(a) Member (b) Adjuster
(c) Manipulator (d) Operator

(iii) The feature by which one object can interact with another object is _____.
(a) Massage passing (b) Data binding
(c) Data transfer (d) Inheritance

(iv) In which access should a constructor be defined, so that object of the class can be created in any function?
(a) Any access specifier will work
(b) Private
(c) Public
(d) Protected

[Turn over

(v) Which keywords among the following can be used to declare an array of objects in C++?
(a) Allocate (b) New
(c) Arr (d) Create

(vi) What happens if non static members are used in static member function?
(a) Executes fine
(b) Executes if that member function is not used
(c) Compile time error
(d) Runtime error

(vii) What does C++ append to the end of a string literal constant?
(a) A space (b) A number sign(#)
(c) An asterisk(*) (d) A null character

(viii) To write a comment in a C++ program, you begin the comment with _____.
(a) ** (b) //
(c) \\ (d) $$

(ix) Instance of which type of class can't be created?
(a) Nested class (b) Parent class
(c) Abstract class (d) Anonymous class

(x) The generic type in a template function.
(a) Must be T
(b) Can be T
(c) Cannot be T for functions we create, but may be for C++'s built-in functions
(d) Cannot be T

2. (a) What do you mean by access specifier? What are the different types of access specifers available in C++? Explain briefly about each of them. (2 + 3 + 6 = 11)

(b) Write a simple program to show how memory is allocated and deallocated dynamically in C++. (4)

3. (a) What do you mean by polymorphism? What are the different types of polymorphisms? Explain how run time polymorphism can be implemented in C++ with a suitable example. (2 + 2 + 6 = 10)

(b) State the differences between function overloading and function overriding. (5)

4. (a) What do you mean by inheritance? Discuss about the different types of inheritances. (2 + 6 = 8)

(b) Write a program in C++ to demonstrate multiple inheritance. (7)

5. (a) What are static data members of a class? Write a program in C++ to show the use of static data members of a class. (2 + 4 = 6)

(b) Explain why and how virtual functions are used in C with a suitable example. (3 + 6 = 9)

6. (a) Explain about friend function and friend classes in with suitable examples in C++. (8)

(b) What is an exception? Explain briefly about the exception handling mechanism in C++. (2 + 5 = 7)

7. Write short notes on (any three) : (3 × 5 = 15)

(a) Generic programming

(b) Stream classes in C++

(c) Inline function

(d) Binary operator overloading

(e) Constructors in C++

(f) Abstract class.