Total No. of Questions : 8]

SEAT No. :

PC-4420

[Total No. of Pages : 3

[6352]-156

S.E. (Computer Science and Engineering) (Data Science)

OBJECT ORIENTED PROGRAMMING

(2019 Pattern) (Semester - III) (210643)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Assume suitable data, if necessary.*
3) *Draw neat diagrams wherever necessary.*
4) *Figures to the right indicate full marks.*

Q1) a) Explain pitfalls of Operator Overloading. Write down program to overload unary operators. (Any two operators). [6]

b) Explain data conversion in C++. Write down the program for conversion of Class Type to Primitive Type. [5]

c) How virtual functions and virtual destructor are implemented in C++? Explain with help of a program. [6]

OR

Q2) a) Explain the polymorphism features of OOP. How different types of polymorphism achieved in C++. Explain it along with example. [6]

b) Explain implicit and explicit type casting with help of a program. [5]

c) Explain abstract class concept along with example. [6]

Q3) a) Explain the data hierarchy of stream classes in C++ with suitable diagram and an example. [5]

b) Explain command line arguments in C++. Write a C++ program that takes two integer values as command line agruments, calculates their sum,and displays the result. Also discuss how the argc and argv parameters are used in the program. [7]

c) Explain the functions used for the file pointer manipulation in C++. Write a C++ program that demonstrates the use of these functions by reading data from a specific position in a file and writing data at another position. [6]

OR

P.T.O.

Q4) a) Explain the error handling in file I/O. [5]

b) Explain stream classes and their use? Provide the hierarchy of stream classes in C++. [7]

c) Explain the role of a file pointer in C++. Write a C++ program that opens a text file, reads its content using a file pointer, and displays the content on the console. [6]

Q5) a) Explain the syntax and structure of class templates in C++, How do class templates enable code reusability? Write a C++ program that defines class template using multiple parameters. [6]

b) Explain the concept of re-throwing exceptions in C++. Write a C++ program that demonstrates the re-throwing of an exception from a catch block,and explain how the exception is handled in subsequent catch blocks. [6]

c) How templates in C++ contribute to generic programming? Write a C++ program for function template that calculates the maximum of two values which can be of any data type. [5]

OR

Q6) a) Explain how the exception handling mechanism works in inheritance context. Write a C++ program that demonstrates how an exception thrown by a derived class object can be caught by a catch block for the base class. [6]

b) Explain the main components of exception handling in C++. Write a C++ program that demonstrates the use of mutliple catch blocks to handle different types of exceptions. [6]

c) How to create and use user-defined exceptions in C++. Write a C++ program where we define a custom exception class to handle invalid input (e.g. a negative number) and demonstrate how to throw and catch this exception. [5]

Q7) a) What is the Standard Template Library (STL) in C++? Explain its significance and major components. [5]

b) Explain the role of algorithms in the Standard Template Library (STL). Write a C++ program that demonstrates the use of the sort () algorithm to sort a list of integers in ascending order. [5]

c) Explain the difference between sequence containers and associative containers in C++. Write a C++ program that demonstrates the use of vector (sequence container) and map (associative container). [8]

OR

28) a) What are iterators in C++ STL? Explain the different types of iterators in C++? [5]

b) Explain any 5 functions of the vector class in C++. Illustrate their usage with a C++ program. [5]

c) Explain sequence containers and its main types in C++, Write a C++ program that creates a vector of integers, add elements to it, display elements of the vector using an iterator,remove an element from the end of the vector, resize the vector using the resize () finction and display the resized vector. [8]

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