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10CS36

Third Semester B.E. Degree Examination, Aug./Sept.2020
Object Oriented Programming with C++

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO full questions from each part.*

PART – A

1   a. Explain the terms encapsulation, polymorphism and inheritance in object oriented programming. **(06 Marks)**
    b. What is function overloading? Overload a function area( ), to find area of rectangle, triangle and circle. **(08 Marks)**
    c. With an example, explain when the set of overloaded functions can be combined in to a single function definition by using default arguments. **(06 Marks)**

2   a. Differentiate between class and structure. Write a C++ program to define a class called TIME with hours, minutes and seconds as data members and read( ), display( ) and add( ) as member functions that will add two times. **(10 Marks)**
    b. What is a constructor? What are its characteristics? Define a suitable parameterized constructor with default values for the class box with data members length, breadth and height. **(10 Marks)**

3   a. Define friend function. Explain the rules to be used while using a friend function.
                                                                                                   (05 Marks)
    b. Write a C++ program with a template function to swap two integers, floating points and doubles. **(05 Marks)**
    c. What is operator overloading? Write a C++ program to add two complex numbers by over loading + operator. Also overload >> and << operators for reading and displaying the complex numbers. **(10 Marks)**

4   a. With an example explain the syntax for creating derived class. Also explain the visibility of the base class members, for the access specifiers: private, protected and public while creating the derived class. **(10 Marks)**
    b. List the different types of inheritance. Write a C++ program for inheriting multiple base classes. **(10 Marks)**

PART – B

5   a. With an example, explain the order of invocation of constructors and destructors in multilevel inheritance. **(10 Marks)**
    b. With an example, explain the syntax for passing arguments to base class constructors in multiple inheritance. **(10 Marks)**

6   a. Differentiate between early binding and late binding. With an example explain how late binding can be achieved in C++. **(08 Marks)**
    b. Write a C++ program to illustrate the virtual functions in hierarchical inheritance. **(06 Marks)**
    c. Define pure virtual function. Write a C++ program to illustrate pure virtual function.
                                                                                                   (06 Marks)

7 a. With an example and general syntax explain the member functions:
i) width( )   ii) precision( )   iii) fill( )   **(06 Marks)**

b. Explain the use of ifstream and ofstream classes for file input and output.   **(08 Marks)**

c. Write a C++ program to read a binary file, which contains the details of 5 students such as Name, rollno, age and grade obtained by the student. Display the above read details on the screen.   **(06 Marks)**

8 a. What is exception handling? Briefly explain the facilities in C++ for exception handling.   **(10 Marks)**

b. List and explain five member functions from vectors and lists classes in STL.   **(10 Marks)**

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