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**Question Paper Code : 71377**

B.E/B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Third Semester

Computer Science and Engineering

CS 2203/CS 35/CS 1202/080230004/10144 CS 304 — OBJECT ORIENTED PROGRAMMING

(Common to Information Technology)

(Regulation 2008/2010)

(Common to 10144 CS 304 — Object Oriented Programming for B.E. (Part – Time)  
First Semester — CSE — Regulation 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the use of the 'friend' keyword in C++?
2. What are the two types of polymorphism? Give an example for each.
3. What is the syntax to dynamically allocate memory to a constructor?
4. What are the four operators in C++ which you cannot overload?
5. Write down the syntax of try-catch-throw exception handling in C++.
6. Differentiate function template and class template.
7. What does keyword 'virtual' state when used with class and when used with a function?
8. What is down casting? Explain with an example.
9. What is anonymous namespace? Give the syntax.
10. State any four advantage of standard template library in C++.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write an object oriented program in C++ that prints the factorial of a given number using a copy constructor and a destructor member function. (8)
- (ii) Write a C++ program to overload '+' operator to add two objects of a class using friend function. (8)

Or

- (b) (i) Develop a function that computes and displays the area of a rectangle and the area of a square. Declare this function as a friend function in Rectangle and square classes and compute the area of a rectangle and square objects from the main function. (8)
- (ii) Construct a class by name 'Box' with a constructor method and volume method. Constructor initializes the length, breath and height of the box objects. Volume method computes the volume of the box using the formula length \* breath \* height. Create three box objects and compute their volume by declaring a pointer to the box class. (8)
12. (a) (i) Write a program to check how many instances of a class are created using the static member function. (8)
- (ii) Write an object oriented code where a member function of a class reads a set of numbers upto 'n' and prints the contents of the array in the reverse order. This function is called by pointer to function member of the class. Test this code with data. (8)

Or

- (b) (i) How would you declare function to be a constant in C++? What are the properties of such function? Explain with a demo program. (8)
- (ii) Write a C++ program to initialize a 2 × 2 matrix of a private member function and print the data using another function which is not a member of the same class. (8)
13. (a) (i) Write an object oriented program in C++ using a class template to read any five parameterized data type such as float and integer, and print the average. (8)
- (ii) Write a program that illustrates rethrowing an exception. (8)

Or

- (b) (i) Write function template that sorts integer data. Write a driver program that inputs, sorts and outputs an int array and a float array. (8)
- (ii) Write a program that demonstrates several exception types being caught with the catch (...) exception handler. (8)

14. (a) Develop an object oriented program in C++ to prepare the marksheet of an university exam with the following items read from the keyboard:

Name of the Student

Roll No

Subject Name

Subject Code

Internal Marks

External Marks

Design a Base class consisting of the data members such as name of the student, roll number and subject code, internal marks and external marks. The program should be able to do the following tasks:

Build Table

Display the Table

Insert into the table

Delete from the table

Edit entry

Search for a record that is needed to be printed. (16)

Or

- (b) Write a program in C++ to demonstrate Runtime polymorphism in hierarchy of classes on a member function that performs dynamic casting. (16)
15. (a) Write a program in C++ to read an array of class object of student\_info such as name, age, sex, height and weight from the keyboard and to store them on a specified file called 'stud-file' using read and write member functions. Again, the same file is opened for reading and displaying the contents. (16)

Or

- (b) Write a program in C++ using a random access file function to create a database of student's information such as name, roll no, sex, address and the program should have the following facilities:
- (i) To display the entire database
  - (ii) To display only a particular record
  - (iii) To update a record
  - (iv) To delete a record. (16)