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Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, May 2015
(2013 Scheme)
13.403 – OBJECT ORIENTED TECHNIQUES (FR)

Time : 3 Hours Max. Marks : 100

PART – A

All questions are **compulsory**. **Each** question carries **4** marks.

1. What are the uses of scope resolution operator ?
2. Define a class 'Time' with suitable member variables and the member functions for get and set time. Show the different ways of defining the member functions.
3. What is the significance of friend function in operator overloading ?
4. What are the uses of access modifiers ?
5. Distinguish between errors and exceptions. How exceptions are thrown in C++ ?

(5×4=20 Marks)

PART – B

Answer **one** question from **each** Module. **Each** question carries **20** marks.

Module – I

6. a) What is a reference variable in C++ ? Write a function to swap the values of two variables given as reference parameters. **8**

   b) Describe the characteristics and applications of object oriented programming. **12**

7. a) What is an inline function ? What are its advantages ? Give an example. **8**

   b) Discuss the enhancements of C++ to C programming language. **12**

P.T.O.

Module – II

8. a) What is a friend class ? What are the merits and demerits of friend functions ? 6

   b) Implement a class 'Point' whose objects are 2-D points. It must have two floating-point data members x and y which stores the co-ordinates of a point, a default constructor and parameterized constructor. It also include the member functions add ( ) to add another point with the current point, sub ( ) to subtract another point from the current point and dist ( ) to compute the distance of another point from current point. Current point refers to the point corresponding to the object used to invoke the respective member function. Also write the main ( ) function to test the complete functionality of the class. 14

9. a) Why constructors are needed in a class ? Explain the different types of constructors with examples. 14

   b) Write a program to implement a class 'weight' with data members kilograms and grams and member function sum_of _weights ( ) to find the sum of two weight objects given as arguments to the member function. Write a main program to test your class. 6

Module – III

10. a) What is the significance of virtual function in C++ ? 6

    b) Implement a class 'Complex_num' having floating point data members real and image for storing the real and imaginary parts of a complex number respectively. Overload the stream extraction and stream insertion operators to read the complex numbers and display the complex numbers (in "a + ib" format). Also overload '+' to perform addition of two complex numbers. Complete the program with a main ( ) function to test all the functionality of the class. 14

11. a) Differentiate between function overloading and method overriding. Give examples. 6

    b) Create two base classes, person and department. Use the class person to store the personal details such as name and age. Use the class department to store departmental details such as dept._code and dept._name. Add suitable member functions to the base classes for reading and displaying personal details and departmental details. Derive a class employee from the base classes person and department. Add data members employee_id, basic_pay, DA, HRA and gross_salary to the class employee. Add member functions process-salary () to find the gross salary of an employee, get_data ( ) to read the employee details and display_data ( ) to display the following employee details_name, age, employee_id, dept._code, dept._name and gross_salary. Using these three classes, design a program to read and display employee details. 14

Module – IV

12. a) Write a program that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by a single space. 6

    b) How exceptions are handled in C++ ? Illustrate with examples. 14

13. a) Write a C++ program to implement a generic class 'Queue'. Include default and parameterized constructors. Define member functions insert Q ( ) to insert values into the Queue, delete Q ( ) to remove values from Queue, is Empty ( ) and is full for testing Queue is empty or full. Write a main program to test your class for integer and character data. 14

    b) Write a program that reads the file FIRST.txt and creates a new file named SECOND.txt containing all words from the file FIRST.txt, converting to uppercase. 6