S 9101

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Fourth Semester

Computer Science and Engineering

CS 237 — OBJECT ORIENTED PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the properties of an Abstract Data Type?

2. Is class an ADT? Justify.

3. Distinguish structures and classes.

4. What are the three access specifiers used in C++? What type of access do they provide?

5. What is a dangling pointer?

6. What are the operators that cannot be overloaded and what are the operators that cannot be overloaded using friend functions?

7. Describe how exceptions are handled.

8. Differentiate class template and template class.

9. Differentiate overloading and overriding functions.

10. What is an interface? Write an interface to define the few constants, in Java.

PART B — ($5 \times 16 = 80$ marks)

11. (a) Describe the following programming paradigms :

    (i) Unstructured programming

    (ii) Procedural programming

    (iii) Modular programming and

    (iv) Object-oriented programming.

Or

(b) Define the following terms with respect to Object Oriented Programming

(i) Encapsulation

(ii) Polymorphism

(iii) Aggregation

(iv) Type safety.

12. (a) What are the characteristic features of constructors and destructors and copy constructor? Write a C++ program to multiply two matrices. Use suitable constructors and destructors.

Or

(b) (i) Write a function to determine the roots of a quadratic equation, illustrating call by reference way of passing parameters. (8)

(ii) Write a class counter to model a counter. Use constructor to initialize the count value to zero and assign a unique identifier to each instance. Equip the class with methods to increment the count, reset the count, display the count value. (8)

13. (a) What are the different types of inheritance supported in C++? Give examples (with program) that would fit each type.

Or

(b) Write a class to describe time in hh/min/sec format. Provide constructors to initialize the time, overload + to add 2 time values, << to display time value, >> to read time value. Write a C++ program to test the functions.

14. (a) (i) Distinguish between error and exception. (6)

(ii) Explain the syntax of usage of the keywords that are used for handling exceptions in C++. Write a program to read 10 even numbers. Generate exceptions when negative and odd numbers are entered. Provide handlers to display an appropriate message. (10)

Or

(b) (i) Write a function template to swap two values. Explain how function templates are instantiated. (8)

(ii) Define the concept of streams in C++ and its types. (8)

15. (a) Write a class in Java to describe a Bicycle. Derive a class Mountain Bike from this class. Provide suitable methods. What can be done in the subclass? How are the inherited members used?

Or

(b) Write a Java program to illustrate how (i) A class inherits another class (ii) An interface inherits another interface and (iii) A class inherits a class and implements an interface.
