B 264

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

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. Which feature of object oriented programming provides (a) data hiding (b) reusability?

2. List any two drawbacks of procedure oriented languages.

3. What is unique about this pointer?

4. What is a default constructor? When is it used?

5. What are the operators that cannot be overloaded? What are the operators that can be overloaded only by friend functions?

6. What effect does inheritance have on the working of constructors and destructors?

7. Write a function template to swap two variables.

8. What is the difference between the statements?

```
cin > > ch ;

ch = cin . get ( ) ;
```

9. List out any two salient differences between C++ and JAVA.

10. Differentiate overloading and overriding.

PART B — (5 × 16 = 80 marks)

11. (i) Design template classes such that they support the following statements :

Rupee < float > r1, r2 ;

Dollar < float > d1, d2 ;

d1 = r2 ; 11 converts rupee to dollar (US)

Write a program which does such conversions. (8)

(ii) Explain the exception handling model of C++ with various constructs supported by it. Write a program which transfers the control to user defined terminate function when raised exception is uncaught. (8)

12. (a) What is object oriented paradigm? Explain the various features of OO paradigm. (16)

Or

(b) Define the following terms related to OO paradigm :

(i) Message passing

(ii) Delegation

(iii) Genericity

(iv) Persistence. (16)

13. (a) (i) Write a program for manipulating coordinates in polar coordinate system. Represent points as objects. The class polar must include data members such as radius and theta and member functions such as add ( ), sub ( ), angle ( ) etc. (10)

(ii) What are the rules associated in defining constructors and destructors? (6)

Or

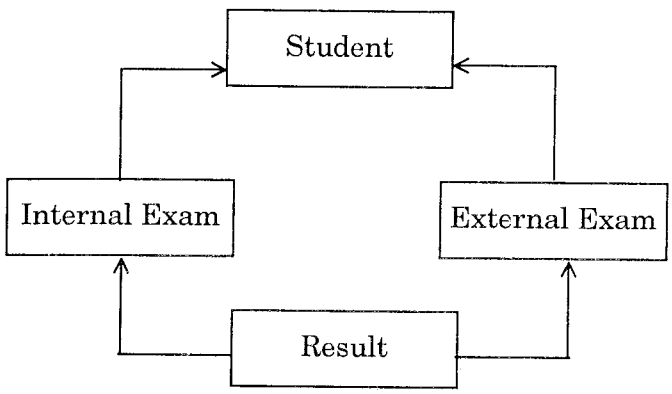
(b) (i) Write a program to read a matrix of size $m \times n$ from the keyboard and display the same on the screen. Make row parameter as a default argument. (8)

(ii) What are (1) static (2) constant members? Give examples to support your explanation. (8)

(a) Create two classes DM and DB to store the value of distances. DM stores distances in metres and centrimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the results may be a DM or DB object depending on the units in which the results are required. The display should be in ft–inches or mt–cm depending on the object of display. (16)

Or

(b) Write a C++ program to model the following inheritance hierarchy.



15. (a) Define an interface that declares the methods count and print for a collection of items. Define another interface that declares a method to search for an item. Define a class integer collection to represent a collection of integers and provide methods to count the number of items, print the number of items, search for an item and find the sum of all integers in the collection. Define another class string set that implements all the methods defined in both these interfaces on a collection of strings. Write a test program to test these classes. (16)

Or

(b) (i) How are abstract classes different from interfaces? (6)

(ii) Create a class to model entries in a telephone directory (name, address, phone number). Define suitable classes and inheritance hierarchy. Write a program to test these classes. (10)