B 345

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

Fourth Semester

Electrical and Electronics Engineering

EE 237 — OBJECT ORIENTED PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by code reusability?

2. How does object oriented programming provide data hiding?

3. Define a class "pen". Include atleast two methods and two attributes.

4. Simplify the following if-else statement.

```
if (i > 0  && i < 100)
    j = i * i ;
else if (i > 10 && i < 50)
    j = 10 + i ;
else if (i > = 100)
    j = i ;
else j = 1.
```

5. What is the use of copy constructor?

6. What is the need for having static members in a class? Give an example.

7. Give your comment on the following overloaded definitions.

```
void inc (int & i) {
        i = i + 1;
}
void inc (int & i , int diff = 1)
    { i = i + diff ;
    }
```

8. What is a template? What is its use?

9. Suppose you model an electronic circuit using object oriented paradigm. Identify 2 classes and 2 objects of each of them.

10. List out any two differences between object oriented and procedure oriented paradigm.

PART B — ($5 \times 16 = 80$ marks)

11. (i) What are the steps involved in object oriented design approach? Explain with suitable examples. (8)

(ii) Take any one application in electrical engineering. Explain identification of classes and objects and relation/communication between classes. (8)

12. (a) Define the following terms with an example.

(i) Abstraction

(ii) Data hiding

(iii) Type checking

(iv) Reusability. ($4 \times 4 = 16$)

Or

(b) Distinguish the following terms :

(i) Objects and classes

(ii) Data abstraction and encapsulation

(iii) Inheritance and polymorphism

(iv) Dynamic binding and message passing. ($4 \times 4 = 16$)

13. (a) (i) Explain the need of constructors and destructors with examples. Also give the rules associated in defining these functions. (8)

(ii) What do you mean by dynamic initialization of objects? Why do we need to do this? Give examples to support your answer. (8)

Or

(b) Define a class to represent a bank account. Include data members to represent customer name, account number, type of account, balance amount in the account. Include member functions to assign initial values, deposit, withdraw and display balance. Write a program to these functions.

14. (a) Create a class MATRIX to represent matrices of size m × n. Define

(i) Addition

(ii) Multiplication

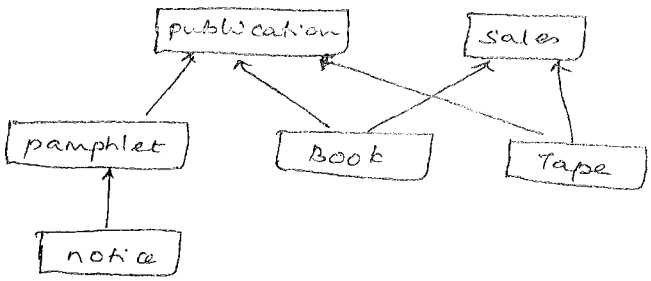
(iii) Display using operator overloading. Write a test program.

Or

(b) (i) What is a friend function? What are its merits and limitations? (8)

(ii) Explain why the assignment operator = cannot be overloaded using friend function and why friend functions are used to overload << and >> operators. (8)

15. (a) Write a program to model the following inheritance hierarchy.



Or

(b) (i) What are virtual functions? What are pure virtual functions? What is the difference between them? Give examples. (8)

(ii) What is a function template? Write a function template for finding the largest number in a given array. The array parameter must be of generic data types. What is a class template? Give an example. (8)