R 326

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2005.

Fourth Semester

Electrical and Electronics Engineering

EE 237 — OBJECT ORIENTED PROGRAMMING

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define Abstraction and Encapsulation. How are these terms interrelated?

2. What are the features of object oriented programming that differentiates it from object based programming?

3. Group the following as classes and objects :

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4. What is a dangling pointer? What dire consequences could result from dereferencing a dangling pointer?

5. What is the difference between copy constructor and assignment operator?

6. What is the difference between the effects of the following two delcarations :

   Counter $y(X)$;

   Counter $y = X$;

7. What is an abstract base class?

8. Comment on the following definition:

```
Class X {
Protected : int a; } ;
Class Y : Public X {
Public :
    Void set (X x, int C)  {x.a = c;}
};
```


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9. What is the difference between a function template and a template function?

10. What are the steps involved in object oriented design approach?

PART B — (5 × 16 = 80 marks)

11. (i) Implement a string class. Each object of this class will represent a character string. Data members are the length of the string and the actual character string. In addition to constructors, destructor, access functions and a print function include a subscript function. (10)

(ii) Write a function to reverse a string in place (i.e. without duplicating all the characters) (6)

12. (a) Compare the features of object oriented programming and procedure oriented programming. Explain the organization of data and functions in both paradigms. (16)

Or

(b) Describe the following terms with suitable examples :

(i) Inheritance

(ii) Polymorphism

(iii) Dynamic binding

(iv) Message passing. (4 × 4 = 16)

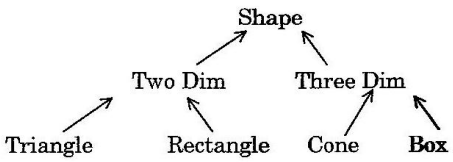
13. (a) Implement a vector class, with a default constructor, a copy constructor, a destructor and overloaded assignment operator, equality operator, stream insertion and extraction operator. (16)

Or

(b) (i) What are the characteristic features of friend functions? Give examples. (8)

(ii) List any 4 rules associated with operator overloading. What are the operators that cannot be overloaded? What are the operators where a friend cannot be used? (8)

14. (a) Implement the following class hierarchy : **(16)**



Or

(b) (i) Write any four rules associated with virtual function. Give an example. **(8)**

(ii) Write and test a program that instantiates a function template that returns the minimum of two values. **(8)**

15. (a) Explain the exception handling model. Describe the syntax of exception handling constructs with suitable examples. **(16)**

Or

(b) Take any one application in electrical engineering. Describe object oriented analysis and design with reference to the application. Explain identification of classes and objects and relation/communication between classes. **(16)**
