

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 1449**

Roll No.

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**M.C.A.**  
**(SEMESTER-II) THEORY EXAMINATION, 2011-12**  
**OBJECT ORIENTED SYSTEMS**

*Time : 3 Hours ]*

*[ Total Marks : 100*

*Note :* Answer **all** the Sections.

**Section – A**

1. Attempt **all** the question parts. **10 × 2 = 20**
- (a) Describe the relationship between objects & classes.
  - (b) What do you mean by object orientation ? Explain in brief.
  - (c) What are the constraints of data flow diagram ?
  - (d) Discuss OMT methodologies.
  - (e) Define the terminology used in UML technique.
  - (f) Describe structured analysis and structured design in brief.
  - (g) What is inline function ? How does it work ?
  - (h) Can a friend function be a member of a class ? Yes/No. Support your answer with example.
  - (i) Write the syntax of exception that has occurred. How that exception should be handled ?
  - (j) What is a class template ? How does it differ from function templates ?

## Section – B

2. Attempt any **THREE** question parts : 3 × 10 = 30
- (a) What is meant by object-oriented modelling & design ? Describe the basic aspects of object oriented approach & also differentiate it with structured approach.
  - (b) Design a state diagram of a student record. Make assumption for the data needed.
  - (c) Concatenate two strings using operator overloading using C++ codes.
  - (d) What do you mean by preprocessor directives ? Write a structure of macro to show the logic of finding the smallest of three numbers.
  - (e) Compare & contrast between OMT with SA/SD, JSD.

## Section – C

Attempt **all** questions : 5 × 10 = 50

3. Attempt any **ONE** part : (1 × 10 = 10)
- (a) Describe Link & Association with suitable sketch in detail.
  - (b) Explain Generalization & Aggregation with suitable example & sketch.
4. Attempt any **ONE** part : (1 × 10 = 10)
- (a) What are the use case diagrams ? Explain by suitable example in detail.
  - (b) Explain in detail nested state diagram with suitable example.
5. Attempt any **ONE** part : (1 × 10 = 10)
- (a) Write a program in C++ to read from the file “example.txt” and write into the file “system.txt”. Kindly use the function to open() & close().
  - (b) Design & implement the Object Oriented Model by using UML.

6. Attempt any **ONE** part :

(1 × 10 = 10)

- (a) What do you mean by function overloading ? Write a program to implement “+” operator overloading.
- (b) What is polymorphism ? Write the program to calculate the area of the CRectangle & CTriangle using the concept of pointer to base class with the following data:

```
class CPolygon {
protected:
int width, height;
public:
void set_values (int a, int b)

}

class CRectangle: public CPolygon{ }

class CTriangle: public CPolygon { }
```

7. Attempt any **TWO** parts :

(2 × 5 = 10)

- (a) Discuss with an example the three different techniques of OMT model.
- (b) Write a program to find maximum of two numbers using templates.
- (c) What are Virtual Functions ? Base class has some virtual method and derived class has a method with the same name. If we initialize the base class pointer with derived object, calling of that virtual method will result in which method being called ?