2012

MCA

3rd SEMESTER EXAMINATION

OBJECT ORIENTED PROGRAMMING

PAPER—MCA-303

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer *Q. No. 1* and any *five* from the rest.

1. Answer any *ten* questions : 2×10

(i) What is meant by abstraction ?

(ii) What are templates ? What are their advantages ?

(iii) What is the use of class path ? How it helps in the execution of a java program ?

(iv) How can you define and implement interface using a program ?

(v) Differentiate between checked and unchecked exception.

(vi) Explain two uses of 'final' keyword.

(vii) What are the access specifiers available in C++?

(viii) What does it mean by saying object of a class?

(ix) What is a 'this' pointer?

(x) When is the destructor called?

(xi) How constructor differs from a user-defined member functions or methods?

(xii) What are the operators that cannot be overloaded and why?

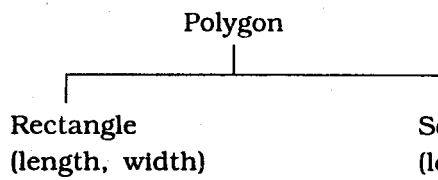
2. (a) Explain. with suitable examples, the advantages of object oriented language over Structured programming language.

   (b) What is abstract class? How does it differ from Interface? 5+5

3. (a) How do you scope resolution operator for accessing global variables? Also discuss its other uses.

   (b) How is exception handing implemented in Java? Write a program that raises an exception when a number is divided by zero and prints a suitable error message. 4+6

4. (a) Consider the following class hierarchy :



Create the class hierarchy having at least one constructor for each class. Assuming that all polygons are either rectangles or squares. Write a polymorphic function to calculate the areas of the figures.

(b) What are friend functions? Explain the utility of friend functions with the help of an example. 6+4

5. (a) Consider the following code in java and explain the error (if any) in the code :

```
byte b;
b=127;
b=b*2;
```

(b) Write programs to show the call by reference both in C++ and Java.

(c) What is class variable? 4+4+2

6. (a) Differentiate among final, finalize and finally.

(b) What do you mean by 'static block' in Java?

(c) Differentiate among public, protected and no-modifier in the context of package. 5+2+3

7. (a) How do you change the default behaviour of a 'new' operator when it fails to allocate require amount of memory from the heap.

   (b) Briefly discuss with the help of examples, the three situation when the copy constructors are called.

4+6

8. Write short note on any *two* : 5×2

   (a) Difference between Applet and Java program ;

   (b) Inner class in Java ;

   (c) Thread Priority ;

   (d) Pure virtual function ;

   (e) Function overloading versus Function overriding.

Internal Assessment **30**