Q. P. Code: 08243

(Time: $2\frac{1}{2}$ hours)

[Marks: 75]

Please check whether you have got the right question paper.

N. B.: (1) **All** questions are **compulsory**.

    (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.

    (3) Answers to the **same question** must be **written together**.

    (4) Numbers to the **right** indicate **marks**.

    (5) Draw **neat labeled diagrams** wherever **necessary**.

    (6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any three* of the following: **15**

a. What is Object Oriented Programming? State any three advantages and applications.

b. Explain concept of encapsulation and abstraction.

c. Explain the relationship between object and class.

d. What is Polymorphism? Give example for the same.

e. What is inheritance? State its types.

f. Give comparison between Object oriented and Procedure oriented programming languages.

2. Attempt *any three* of the following: **15**

a. What is constructor? State the rules for constructor.

b. Explain the concept of passing object as an argument.

c. Write a program to implement the concept of constructor and destructor.

d. Write a program to design a class MyCalculator with add(), mul() and sub() methods.

e. Explain the concept of friend function with suitable example.

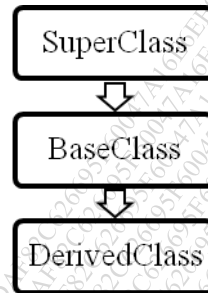f. Write a program to implement the concept of pointer to object.

3. Attempt *any three* of the following: **15**

a. What is overloading? Write a program to demonstrate the concept of function overloading.

b. What is operator overloading? State the rules for operator overloading.

c. List the operators that cannot be overloaded. Write a program to add two complex numbers by overloading binary operator.

d. What is static member and function? State its characteristics.

e. What is method overriding? Explain the use of virtual function.

f. What is abstract class? State the properties of abstract class.

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4. **Attempt _any three_ of the following:** 15
a. What are access specifiers? Explain the use of each.
b. Write a program to implement the concept of single level inheritance.
c. Write a C++ program to handle various exceptions.
d. Explain the use of throw and catch keywords with proper syntax.
e. Explain the difference between deriving a class in public mode and private mode.
f. Write a program to implement the inheritance for the given hierarchy.

5. **Attempt _any three_ of the following:** 15
a. What is generic programming? Explain the use of generic programming.
b. Explain with example the use of class templates.
c. Write a program to implement the concept of function template.
d. What are file operations? Explain different modes of files.
e. Write a program to read data from user and write to the file.
f. Write a program to copy the content from _file1_ to _file2_.

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