

13. What is Virtual Polymorphism ? How virtual functions can be used to implement the runtime polymorphism ? Explain with the help of example.

*Or*

Write short notes on the following :

- (a) Buffering 5
- (b) Concurrent Object-Oriented Systems. 6

Roll No. ....

Exam Code : J-19

Subject Code—0122

**M. Sc. (CS)/M. C. A. EXAMINATION**

(Batch 2009 Onwards Main & Re-appear)

(Fourth Semester) (M.C.A.-3 Years)

OBJECT ORIENTED PROGRAMMING

USING C++

MS-17

*Time : 3 Hours*

*Maximum Marks : 70*

**Section A**

**Note :** Attempt any *Seven* questions. 7×5=35

1. What is meant by paradigm ? Discuss Object-oriented programming paradigms.
2. What is Inheritance ? Explain *two* benefits of inheritance, with an example of each.

3. Explain class and function template using suitable examples in C++ programming.
4. What is meant by member access modifiers ? Discuss exception handling with example.
5. How memory is allocated to an object ? State with the help of an example.
6. Define friend function. List the characteristics of friend function.
7. What are the input and output streams ? Explain.
8. What are the different modes of opening a file ? Give syntax for each mode.
9. Describe the use of interface class with suitable example.
10. Briefly discuss how concurrency is achieved in object-oriented systems ?

## Section B

**Note :** Attempt all the questions.

11. Differentiate between the following terms with suitable examples :
  - (a) Abstraction and Encapsulation
  - (b) Function Overloading and Function Overriding.

*Or*

Explain the visibility of base class members for the access specifiers : private, protected and public while creating the derived class and also explain the syntax for creating a derived class. **12**

12. Explain the features are of object oriented programming with suitable examples.

*Or*

Explain the following with illustrative examples :

- (a) Copy Constructor
- (b) Parameterized Constructor. **12**