MCA/M07
Object Oriented Systems and C++
MCA -205

Time : 3 Hours MM:50

Note:- Attempt Five questions in all, selecting One question from each unit. All questions carry equal marks.

UNIT-I

1(a) What is recursive aggregation? Give one example. 3
(b) Abstraction and encapsulation are complement to each other. Comment. 3
(c) Distinguish between strongly typed and weakly typed languages. 2
(d) Distinguish between time persistence and space persistence of objects. 2

2(a) Write at least three attributes and three operations for each of the following objects – company, window, and page. 3
(b) What is association? Give two examples of binary and two examples of ternary association from the real world. 3
(c) What is abstract class? How is it different from concrete class? Explain with example. 4

UNIT –II

3(a) Define the following terms associated with the dynamic model. Also give at least two examples for each: 4
Event, state, activity, action
(b) Define scenario and event trace. Give one example of each. 6

4(a) What is Functional Model (FM)? Give at least three mappings of FM with the Object Model and three mappings of FM with the Dynamic Model. 6

(b) Give two differences between control flow and data flow. 2
(c) What are global resources? What decision would you take to handle these resources? 2

5(a) What are the two types of control flows in a software system? Explain each in brief. 5
(b) How can you optimize a design? Explain. 5

UNIT-III

6 Distinguish between the following in C++
(a) Internal and External linkage functions. 3
(b) Static and Non-static data member 3

7(a) Explain the concept of friend class with suitable example. Can you make a particular method of a class as a friend of another class? If, Yes, give example. 4

(b) How can you create dynamic object? Explain with example. 4

8(a) What is operator overloading? Overload new and delete operator. 6

(b) Explain the need of protected access specifier through suitable example. 4

9(a) What is multiple inheritance? How can you pass parameters to the constructors of base classes in multiple inheritance? Explain with example. 5

(b) What is virtual function? Give suitable example. How is it different from pure virtual function? 5

10(a) Design a template class for sorting numbers. Demonstrate its use. 5

(b) Create a sequential file to write objects of your choice. Also demonstrate how can you read objects from this file? 5