Code : 051401

B.Tech 4th Semester Exam., 2019

OBJECT ORIENTED PROGRAMMING

Time : 3 hours *Full Marks* : 70

Instructions :

(i) *The marks are indicated in the right-hand margin.*

(ii) *There are* ***NINE*** *questions in this paper.*

(iii) *Attempt* ***FIVE*** *questions in all.*

(iv) *Question No.* ***1*** *is compulsory.*

1. Choose the correct option (any *seven*) : 2×7=14

(a) The compiler identifies a virtual function to be pure

(i) by the presence of the keyword pure

(ii) by its location in the program

(iii) if it is equated to 0

(iv) None of the above

(b) For a method to be an interface between the outside world and a class, it must be declared

(i) private

(ii) protected

(iii) public

(iv) external

(c) C++ encourages structuring a software as a collection of components that are

(i) highly cohesive and loosely coupled

(ii) not highly cohesive but loosely coupled

(iii) highly cohesive and tightly coupled

(iv) not highly cohesive but tightly coupled

(d) The fields in a structure and class of a C program and C++ program respectively are by default

(i) public, protected

(ii) protected, public

(iii) private, private

(iv) public, private

(e) Overloading is otherwise called as

(i) virtual polymorphism

(ii) transient polymorphism

(iii) pseudo-polymorphism

(iv) ad-hoc polymorphism

(f) A constructor is called whenever

(i) an object is declared

(ii) an object is used

(iii) a class is declared

(iv) a class is used

(g) class Dog : public X, public Y is an example of

(i) multiple inheritance

(ii) repeated inheritance

(iii) linear inheritance

(iv) None of the above

(h) When a class serves as base class for many derived classes, the situation is called

(i) polymorphism

(ii) hierarchical inheritance

(iii) hybrid inheritance

(iv) multipath inheritance

(i) The use of the break statement in a switch statement is

(i) optional

(ii) compulsory

(iii) not allowed. It gives an error message

(iv) to check an error

2. Write a C++ program and class, with access specifiers, called 'student' having the following : 14

Data members :
name (char type),
marks 1, marks 2, marks 3
(integer type)

Functions :
calc_total();
disp();

The program asks the user to enter name and marks.

Then calc_total() calculates the total marks and disp() displays name and total marks on screen in different lines.

3. Explain encapsulation with the help of an example. How it facilitates data abstraction? 14

4. Create a **Message** class with a constructor that takes a single **string** with a default value. Create a private member **string**, and in the constructor simply assign the argument **string** to your internal **string**. Create two overloaded member functions called **print()** : one that takes no arguments and simply prints the message stored in the

object, and one that takes a **string** argument, which it prints in addition to the internal message. Does it make sense to use this approach instead of the one used for the constructor? 14

5. Write a small program to show the difference between calling a virtual function inside a normal member function and calling a virtual function inside a constructor. The program should show that the two calls produce different results. 14

6. With an example for generating Fibonacci series, explain how a function is invoked using pointers. 14

7. Assume that there is a **class Derv** that is derived from a base **class Base**. Write the declarator for a derived-class constructor that takes one argument and passes this argument along to the constructor in the base class. 14

8. *(a)* What is the difference between compile time and run time errors? 7

(b) What is the use of stack unwinding in exception handling? 7

9. Write short notes on the following : $3\frac{1}{2} \times 4 = 14$

(a) Overloading

(b) Overriding

(c) C++ STL

(d) Constructor

★ ★ ★