3 (Sem–5) CSC M 1

2017

COMPUTER SCIENCE

(Major)

Paper : 5.1

(OOP Using C++)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer : 1×7=7

   (a) Paying attention to the important properties while ignoring inessential details is called

   (i) polymorphism   *(ii)* inheritance

   (iii) abstraction   *(iv)* late binding

   (b) For only one memory location to be reserved for a class variable, no matter how many objects are instantiated, we should declare the variable as

   (i) dynamic

   (ii) volatile

   (iii) static

   (iv) None of the above

(*Turn Over*)

(c) Encapsulation refers to

   (i) the act of representing essential features without including the background details

   (ii) the ability to take more than one form

   (iii) a mechanism to associate the code and data

   (iv) the act of reusing the properties of the existing class

(d) The process by which the objects of one class acquire the properties of objects of another class is called

   (i) polymorphism

   (ii) inheritance

   (iii) dynamic binding

   (iv) message passing

(e) Which of the following is true for function overloading?

   (i) Overloading based on whether parameter's value or reference is passed

   (ii) Overloading based on distinct return types but same parameter types

   (iii) Overloading based on difference in the number of parameters

   (iv) All of the above

(Continued)

(f) Which of the following is true about abstract base class?

   (i) It is mainly used for deriving sub-classes

   (ii) It cannot directly instantiate objects

   (iii) It must have at least a pure virtual function

   (iv) All of the above

(g) While overloading which of the following operators, friend functions cannot be used?

   (i) =

   (ii) [ ]

   (iii) ( )

   (iv) All of the above

2. Define the following terms :   2×4=8

   (a) Parameterized constructor

   (b) Virtual function

   (c) Multiple inheritance

   (d) Generic class

(Turn Over)

3. Answer any *three* questions of the following :

5×3=15

(a) Explain how abstraction is achieved in OOPs.

(b) What is the role of a copy constructor? Explain with a suitable example.

(c) Write a program to implement function overloading.

(d) Give a programming example of friend function.

(e) What is an abstract class? What is the main objective of an abstract class?

4. Answer any *three* questions of the following :

10×3=30

(a) Write the characteristics of constructor and destructor.

(b) Define a class "string". Use overloaded "==" operator to compare two strings.

(c) When is a friend function compulsory? Give an example.

(d) Differentiate between compile-time polymorphism and run-time polymorphism with the help of a program.

(e) A bookshop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the salesperson inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed; otherwise the message "Required copies not in stock" is displayed.

Design a system using a class called "Books" with suitable member functions and customers.

(f) Explain the exception handling mechanism with suitable example.

★ ★ ★