WEST BENGAL UNIVERSITY OF TECHNOLOGY

BCA-402

OBJECT ORIENTED PROGRAMMING WITH C++

Time Allotted: 3 Hours   Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable. All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1.   Answer any *ten* questions. $10 \times 1 = 10$

(i) Data member and member function of a class by default are respectively

(A) private and public   (B) public and private

(C) both private   (D) both public

(ii) Static member function

(A) can access only static members in the same class

(B) has only one copy of it that exists for all instances of a class

(C) can access constant members

(D) both (B) and (C) above

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(iii) Protected data members are accessible to

   (A) members of its own class only

   (B) to the members of derived class

   (C) both (A) and (B) above

   (D) none of the above

(iv) The arguments of a copy constructor is passed by

   (A) value   (B) reference

   (C) pointer   (D) both (A) and (C) above

(v) In object oriented programming, wrapping of data and associated function into a single unit is called _____

   (A) Polymorphism   (B) Inheritance

   (C) Encapsulation   (D) Information hiding

(vi) C++ supports:

   (A) Data abstraction   (B) Function abstraction

   (C) Both (A) and (B)   (D) None of these

(vii) Following operator (s) cannot be overloaded using a friend function:

   (A) *   (B) +   (C) =   (D) /

(viii) Scope resolution operator (::) can be used for

   (A) defining a method outside a class

   (B) defining a static data member of a class

   (C) uncovering a hidden global variable

   (D) all of the above

(ix) Constructor of a class can

   (A) be overloaded   (B) have default arguments

   (C) invoke constructor   (D) be private

(x) Virtual functions can be

   (A) members of some class

   (B) static members of a class

   (C) can be accessed by pointers

   (D) none of these

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(xi) When a function is defined inside a class, this function is called _____

(A) interior function   (B) inside function

(C) class function   (D) inline function

(xii) How can we define member function outside the class?

(A) Using structure   (B) Using union

(C) Using scope resolution   (D) Using Pointer

GROUP B
(Short Answer Type Questions)

Answer any *three* questions.   3×5 = 15

2. What do you mean by inheritance? What are the different forms of inheritance? Give an example of each.   1+4

3. (a) What is inline function? What is its use?   2+1

    (b) What is meant by data hiding?   2

4. What do you mean by dynamic binding? How is it useful in OOP?   2+3

5. How does a C++ structure differ from a C++ class? What is copy constructor? Give an example.   2+3

6. What is a friend function? What are the advantages and disadvantages of using friend function?   2+3

GROUP C
(Long Answer Type Questions)

Answer any *three* questions.   3×15 = 45

7. (a) State the rules pertaining to defining identifiers in C++.   5

    (b) What are the different data types in C++?   5

    (c) Using an example program, explain the use of *new* and *delete* operators.   3

    (d) Define function overloading.   2

8. (a) What is a constructor? Explain different types of constructor with example.   7

   (b) What is the advantage of user-defined copy constructor over default copy constructor?   2

   (c) Differentiate between class and object.   3

   (d) What is scope resolution operator?   3

9. (a) What is Exception handling? What is the usefulness of exception handling? Explain the same citing a suitable example.   7

   (b) What is virtual base class? When and why is it required to inherit a base class as virtual?   4

   (c) Write a program in C++ to show the implementation of virtual base class.   4

10. (a) What are the uses of operator function?   3

   (b) Write a C++ program that will add a 2×2 matrix to another. The program should consider the matrices as objects of an user-defined datatype, where the objects can be added, subtracted and multiplied using +, − and * operators respectively.   12

11.   Write short notes on any *three* of the following: 3×5

   (a) Templates (using an example)

   (b) Abstract class

   (c) Aspects of Object Oriented Programming

   (d) Namespace

   (e) Nesting of Member Functions