IT-504F

PROGRAMMING PRACTICES USING 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.

GROUP A
(Multiple Choice Type Questions)

1. Answer any *ten* questions.

$10 \times 1 = 10$

(i) Which of the following is not a type of constructor?

(A) copy constructor
(B) friend constructor
(C) default constructor
(D) parameterized constructor

(ii) Which of the following is not the member of class?

(A) friend function
(B) static function
(C) const function
(D) virtual function

(iii) Which of the following concept of oops allows compiler to insert arguments in a function call if it is not specified?

(A) default argument
(B) call by value
(C) call by reference
(D) call by pointer

(iv) Which of the following operators is used to bind functions to the class to which they belong?

(A) ~
(B) : :
(C) .
(D) none of these

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[Turn over]

(v) The default access specifier for a class member is

(A) public
(B) protected
(C) private
(D) virtual

(vi) Which is true regarding inline function?

(A) it does not save memory space
(B) it saves memory needed
(C) more calling is needed
(D) inline functions may not be class member functions

(vii) How many instances of an abstract class can be created?

(A) 0
(B) 1
(C) 5
(D) 13

(viii) Which of the following concept means adding new components to a program as it runs?

(A) dynamic loading
(B) data hiding
(C) dynamic typing
(D) dynamic binding

(ix) Which of the following correctly describes overloading of functions?

(A) adhoc polymorphism
(B) virtual polymorphism
(C) transient polymorphism
(D) pseudo polymorphism

(x) Which of the following is the correct class of the object cout?

(A) iostream
(B) istream
(C) ostream
(D) ifstream

(xi) How late binding is implemented in C++?

(A) using C++ tables
(B) using indexed virtual tables
(C) using polymorphic tables
(D) using virtual tables

(xii) Which of the following cannot be used with the keyword virtual?

(A) class
(B) member function
(C) constructor
(D) destructor

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. $3 \times 5 = 15$

2. Write a C++ program to implement function overloading in order to compute power (m, n) where (i) m is double and n is int. (ii) m and n are int. When does the ambiguity problem arise?   4+1

3. What is its difference with pointer? Write a C++ program to sort an array of integer in ascending order using a function called exchange( ) which accepts two integer arguments by reference.   2+3

4. What is the use of friend function? Create a class 'COMPLEX' to hold a complex number. Write a friend function to add two complex numbers. Write a main function to add two COMPLEX objects.   1+4

5. Write a C++ program to find the largest of three numbers using inline function. What are the disadvantages of making a function inline?   4+1

6. Show how can we create and use a virtual destructor.   5

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. $3 \times 15 = 45$

7. (a) Create a class called 'TIME' that has   5
    - three integer data members for hours, minutes and seconds
    - constructor to initialize the object to zero
    - constructor to initialize the object to some constant value
    - member function to add two TIME objects
    - member function to display time in HH:MM:SS format

    Write a main function to create two TIME objects, add them and display the result in HH : MM : SS format.

    (b) Discuss the use of copy constructor with example.

    (c) What is the use of *new* operator? Discuss with example.

8. (a) Explain the difference between overloading and overriding with suitable example.

    (b) What is operator overloading? Explain with example.

    (c) How can we use a virtual base class? Show example.

9. (a) Explain, with example, the significance of pure virtual function.

    (b) What is this pointer? What are the applications of it? What are the advantages of operator overloading?

    (c) What is virtual function? Why do we need it?

10. (a) What is exception? How an exception is handled? Explain with example.

    (b) Discuss the features of constructor. What is dynamic initialization of objects?

    (c) Write a member function of class that returns object.

    (d) How can we send object reference to a friend function? Discuss with example.

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

    (a) Encapsulation

    (b) Abstract class

    (c) Inheritance

    (d) Template

    (e) Visibility of members in public, private and protected inheritance