Professional Course Examination, May 2023

(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Object-Oriented Programming in C++)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A—OBJECTIVE)

(*Marks* : 25)

SECTION—I

(*Marks* : 15)

A. Tick (✓) the correct answer in the brackets provided :   1×10=10

   1. C++ was developed by

      (a) John Backus   (   )

      (b) Dennis Ritchie   (   )

      (c) Bjarne Stroustrup   (   )

      (d) James Gosling   (   )

2. Which of the following header files includes definition of cin and cout?

   (a) istream   ( )

   (b) iomanip   ( )

   (c) ostream   ( )

   (d) iostream   ( )

3. Which of the following cannot be inherited by derived class?

   (a) Public data members   ( )

   (b) Public member functions   ( )

   (c) Protected data members   ( )

   (d) Private data members   ( )

4. A pointer pointing to a variable that is not initialized is called

   (a) null pointer   ( )

   (b) void pointer   ( )

   (c) empty pointer   ( )

   (d) dangling pointer   ( )

5. Which of the following operators cannot be overloaded?

   (a) : :   ( )

   (b) ~   ( )

   (c) - >   ( )

   (d) [ ]   ( )

6. A function that is expanded in line when it is invoked is

   (a) extension function   ( )

   (b) function call   ( )

   (c) inline function   ( )

   (d) member function   ( )

7. Which of the following is not the member of class?

   (a) Static function   (   )

   (b) Virtual function   (   )

   (c) Const function   (   )

   (d) Friend function   (   )

8. Virtual functions in C++ tell the compiler to perform _____ on such functions.

   (a) static binding   (   )

   (b) late binding   (   )

   (c) compile time binding   (   )

   (d) early binding   (   )

9. Which of the following is the correct way to declare a template?

   (a) template[ ]   (   )

   (b) template( )   (   )

   (c) template<>   (   )

   (d) template{ }   (   )

10. Which of the following containers stores the elements in adjacent memory locations?

    (a) std::vector   (   )

    (b) std::list   (   )

    (c) std::map   (   )

    (d) std::set   (   )

B. State whether the following sentences are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. Functions and operators overloading are examples of run-time polymorphism.

   (T / F)

2. Void pointer is also called as null pointer.

   (T / F)

3. Overloaded operators can be overridden.

   (T / F)

4. A function can be declared as friend maximum only in two classes.

   (T / F)

5. A container is an object that stores or holds data (of same type).

   (T / F)

SECTION—II

(*Marks* : 10)

C. Answer the following questions : 2×5=10

1. *(a)* Define tokens. What are the different types of tokens?

   OR

   (b) Write the syntax for switch and do-while statement.

2. *(a)* What is inline function? Write a program to illustrate inline function.

   OR

   (b) What are the two ways to define member functions?

3. *(a)* What are the rules for overloading operators?

OR

(b) What is constructor? Write any four special characteristics of constructor.

4. *(a)* Briefly explain the 'this' pointer.

OR

(b) What is pure virtual function?

5. *(a)* What is a stream? What are the C++ stream classes?

OR

(b) What do you mean by file pointer? Explain.

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

D. Answer the following questions :   10×5=50

1. *(a)* Distinguish between data encapsulation and data abstraction.   4

   (b) Explain the basic concepts of object-oriented programming.   6

OR

   (c) Describe the classification of C++ data types.   5

   (d) What are the main characteristics of object-oriented programming?   5

2. *(a)* What is friend function? Write a program to illustrate a friend function.   1+4=5

   (b) Explain the concept of array of object with a program.   5

OR

   (c) Explain the concept of call by reference with a suitable example.   4

   (d) What is parameterized constructor? Write a program to explain it.

                                                                        2+4=6

3. *(a)* Differentiate between shallow copy and deep copy. 4

(b) What is operator overloading? Write a program to demonstrate overloading unary operators. 1+5=6

OR

(c) What is a virtual function? Write a program to demonstrate virtual function. 1+5=6

(d) What is destructor? Write any three characteristics of destructor. 1+3=4

4. *(a)* What is pointer? Write a C++ program to access array contents using pointers. 1+4=5

(b) Write a CPP program to illustrate the run-time polymorphism. 5

OR

(c) Explain the concept of pointer to object with a program example. 6

(d) Write a C++ program to open and close a file. 2+2=4

5. *(a)* What is STL? Explain with diagram various components of STL. 1+3=4

(b) Describe the three major categories of containers. 6

OR

(c) Explain exception handling mechanism. Write a program to illustrate try-catch mechanism. 2+3=5

(b) What is a template? Write a program to explain function template. 1+4=5

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