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(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : 401

(Object-oriented Programming in C++)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

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

1. (a) What is OOP? How is it different from the procedure-oriented program?   4

(b) Explain the following terms :   6

     (i) Encapsulation

     (ii) Inheritance

     (iii) Polymorphism

14G—360/605a   (Turn Over)

Or

(c) What is a class? Explain the general form of class declaration.   4

(d) Explain the following terms :   6

     (i) Namespace

     (ii) Scope resolution operator

     (iii) Reference variable

2. (a) Explain the concept of function overloading.   3

(b) Write a C++ program to illustrate the use of objects as function argument.   7

Or

(c) Write a C++ program to illustrate the use of overloaded constructors.   7

(d) Write the characteristics of static data member.   3

3. (a) What is copy constructor?   2

(b) Write a C++ program to overload the operator '+' for complex numbers.   8

Or

(c) What is friend function?   2

(d) Write a C++ program to illustrate the run-time polymorphism.   8

4. (a) Write a C++ program to prepare the mark sheet of a university examination with the following items from the keyboard :

Name of the student, Roll no., Subject name, Subject code, Internal marks, External marks

Design a base class consisting of data members—Name of the student and Roll no. The derived class consists of the data members—Subject name, Subject code, Internal marks and External marks. 6

(b) Write a C++ program for implementation of pointers and strings. 4

Or

(c) Write a C++ program for implementation of arrays of pointers. 4

(d) What is virtual function? Explain with an example. 6

5. (a) What is a template class? Write a general format of a function template. 4

(b) What is input and output stream? Explain the command line arguments. 6

Or

(c) What is exception? Write the types of exception. How is it handled in C++? 6

(d) Describe the various error handling functions in file operations. 4

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(4th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : 401

(Object-oriented Programming in C++)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 15)

1. Choose the correct alternative by putting a Tick (✓) mark in the brackets provided : 1×10=10

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

   (i) Static function ( )

   (ii) Friend function ( )

   (iii) Const function ( )

   (iv) Virtual function ( )

(b) Consider the following statements :

    char *ptr; ptr="hello"; cout<<*ptr;

What will be printed?

    (i)   First letter   (   )

    (ii)   Last letter   (   )

    (iii) Entire string   (   )

    (iv)   Syntax error   (   )

(c) In C++, it allows compiler to insert arguments in a function call if it is not specified

    (i)   call by value   (   )

    (ii)   call by reference   (   )

    (iii) default constructors   (   )

    (iv)   default arguments   (   )

(d) Which one of the following the compiler checks the type of reference in the object and not the type of object?

    (i)   Abstraction   (   )

    (ii)   Inheritance   (   )

    (iii) Polymorphism   (   )

    (iv)   Encapsulation   (   )

(e) Which of the following functions is performed by a constructor?

    (i) Construct a new class   (   )

    (ii) Construct a new object   (   )

    (iii) Construct a new function   (   )

    (iv) Initialize object   (   )

(f) Consider the following statements :

    int x=22, y=15; x=(x>y)? (x+y) : (x−y);

What will be the value of x after executing these statements?

    (i) 22   (   )

    (ii) 7   (   )

    (iii) 37   (   )

    (iv) Error cannot be executed   (   )

(g) Which of the following is legal to access a class data member using **this** pointer?

    (i) *(this).x   (   )

    (ii) this.x   (   )

    (iii) *this.x   (   )

    (iv) *(this.x)   (   )

(h) Which of the following operators cannot be overloaded?

    (i) []   (   )

    (ii) ->   (   )

    (iii) *   (   )

    (iv) ?:   (   )

(i) Which inheritance type is used in the class given, class A : public X, public Y?

    (i) Multilevel inheritance   (   )

    (ii) Hybrid inheritance   (   )

    (iii) Multiple inheritance   (   )

    (iv) Hierarchical inheritance   (   )

(j) Which one of the following is the correct way to declare a pure virtual function?

    (i) virtual void Display(void){0};   (   )

    (ii) virtual void Display = 0;   (   )

    (iii) virtual void Display(void) = 0;   (   )

    (iv) void Display(void) = 0;   (   )

2. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

(a) To use either an input or output file, the program must include the **fstream.h**.

(T / F)

(b) When an exception is not caught, the program is aborted.

(T / F)

(c) We can have virtual constructors but not virtual destructors.

(T / F)

(d) The **#ifndef** directive tests to see whether a class has been defined.

(T / ·F)

(e) There are any numbers of instances of an abstract class can be created.

(T / F)

SECTION—II

(*Marks* : 10)

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

(a) What is an abstract class? When do we make a class virtual?

(b) What is **this** pointer? What would be the output of the following?

```
#include<iostream.h>
void main( )
{
        char *ptr="abcd";
        char ch;
        ch = ++*ptr++;
        cout<<ch;
}
```

(c) What will be the output of the following program code?

```
class a
{
        a( )
        {
                cout<<"constructor a";
        }
        ~a( )
        {
                cout<<"destructor a";
        }
};
class b : public a
{
        b( )
        {
                cout<<"constructor b";
        }
    ~b( )
        {
            cout<<"destructor b";
        }
};
void main( )
{
        b b1;
}
```

(d) Write the error handling functions in C++.

(e) What is a stream? What are the C++ stream classes?

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