GURU NANAK INSTITUTE OF TECHNOLOGY

An Autonomous Institute under MAKAUT

2022

IT WORKSHOP (SCILAB/MATLAB/C++)

CS301

TIME ALLOTTED: 3Hours **FULL MARKS:70**

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)

Answer any ***ten*** from the following, choosing the correct alternative of each question: **10×1=10**

			Marks	CO No
1.	i)	The C++ code which causes abnormal termination/behavior of a program should be written under _____ block. a. Catch b. Throw c. Try d. Finally	1	CO2
	ii)	Which of the following symbol is used to declare the preprocessor directives in C++? a. $ b. ^ c. # d. *	1	CO2
	iii)	Which concept allows you to reuse the written code in C++? a. Inheritance b. Polymorphism c. Abstraction d. Encapsulation	1	CO3
	iv)	Where does keyword 'friend' should be placed? a. function declaration b. function definition c. main function d. block function	1	CO4
	v)	How to access the object in the class? a. scope resolution operator b. ternary operator c. direct member access operator d. resolution operator	1	CO1

vi) Which of these following members are not accessed by using direct member access operator? 1 CO1

a. Public
b. Private
c. Protected
d. both private & protected

vii) 1 CO1

```
#include<iostream>
using namespace std;
int x = 1;
void fun()
{
int x = 2;
{
int x = 3;
cout << ::x << endl;
}
}
int main()
{
fun();
return 0;
}
```

Output is:

a. 0
b. 1
c. 2
d. 3

viii) 1 CO5

```
#include<iostream>
using namespace std;
class Base1 {
public:
Base1()
{ cout << " Base1's constructor called" << endl; }
};
class Base2 {
public:
Base2()
{ cout << "Base2's constructor called" << endl; }
};

class Derived: public Base1, public Base2 {
public:
Derived()
{ cout << "Derived's constructor called" << endl; }
};

int main()
{
Derived d;
return 0;
```

}
Choose the correct output:

a) Base1's constructor called
Base2's constructor called
Derived's constructor called

b) Base2's constructor called
Base1's constructor called
Derived's constructor called

c) Derived's constructor called

d) Compiler Error

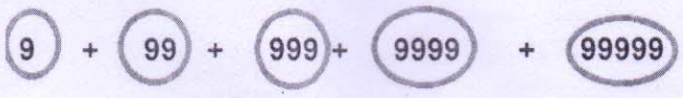
ix)	When can an inline function be expanded? a. Runtime b. Compile time c. Never gets expanded d. Any time	1	CO3
x)	How many types of constructors are there in C++? a. 1 b. 2 c. 3 d. 4	1	CO2
xi)	What happens if a user forgets to define a constructor inside a class? a. Error occurs b. Segmentation fault c. Objects are not created properly d. Compiler provides a default constructor to avoid faults/errors	1	CO4
xii)	What is an object in C++? a. It is function of a class b. It is instance of a class c. It is data type of a class d. It is member of a class	1	CO1

GROUP – B
(Short Answer Type Questions)
(Answer any *three* of the following) **3 x 5 = 15**

		Marks	CO No
2.	Write down features of Object-Oriented Programming (at least five).	5	CO1
3.	Explain with suitable example, syntax of for loop in C++.	5	CO4
4.	Write a program to show a function can be friend between two classes.	5	CO3
5.	Briefly illustrate static data member and static member function concept in C++ language.	5	CO2
6.	Explain concept of abstract class.	5	CO4

GROUP – C
(Long Answer Type Questions)

(Answer any *three* of the following) **3 x 15 = 45**

			Marks	CO No
7.	a.	Define constructor and destructor in OOP.	4	CO2
	b.	 Write a C++ program to calculate sum of series and display the results using friend function.	6	CO2
	c.	State rules of operator overloading and explain '+' operator overloading with an example.	5	CO2
8.	a.	Write a C++ program to show the use of 'virtual' keyword in Inheritance.	5	CO4
	b.	Write a C++ program which will add two complex numbers (both real and imaginary part) using operator overloading concept.	10	CO3
9.	a.	What are the different types of inheritance in C++? Give an example for each.	6	CO4
	b.	Class B is derived from class A. The class B has no members of its own. Does the class B require constructors? If yes, why?	2	CO4
	c.	Make a class named Fruit with a data member to calculate the number of fruits in a basket. Create two other class named Apples and Mangoes to calculate the number of apples and mangoes in the basket. Print the number of fruits of each type and the total number of fruits in the basket.	7	CO4
10.	a.	How is an exception handled in C++?	2	CO5
	b.	Write a program containing a possible exception. Use a try block to throw it and a catch block to handle it properly.	6	CO5
	c.	Write a C++ program containing one base class (publicly inherited) and one derived class containing same named function display (). Create a pointer to the derived class and access the derived class display () function.	5	CO5
	d.	What is called late binding?	2	CO5
11.		Write Short note: (Any three)	3x5=15	
	a.	Polymorphism in C++	5	CO5
	b.	this pointer	5	CO4
	c.	Nested class	5	CO2
	d.	Inline function	5	CO1
	e.	Function overloading	5	CO3