Reg. No.															

Question Paper Code	13554

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Computer Science and Engineeirng

(Common to Electrical and Electronics Engineering, Electronics and Instrumentation Engineering & Instrumentation and Control Engineering)

20CSEL901 - C++ FOR EMBEDDED SYSTEMS

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	In C++, an object is: (a) A function that manipulates data (b) An instance of a class (c) A type of variable (d) A preprocessor directive	*1*	*K1*	*CO1*
2.	What is the scope of a variable declared inside a function in C++? (a) Global (b) Local to that function (c) Accessible everywhere in the program (d) None of the above	*1*	*K1*	*CO1*

3.	Tell what will be the output of the following code?
	int x = 5;
	if (x = 0)
	cout<< "Zero";
	else
	cout<< "Non-zero";
	(a) Zero (b) Non-zero (c) Compilation error (d) Runtime error
		1	*K2*	*CO2*

4.	Infer how many times will the loop execute?
	inti = 0;
	while (i< 3) {
	cout<<i;
	i++;
	}
	(a) 1 (b) 2 (c) 3 (d) Infinite
		1	*K2*	*CO2*

5.	Select the purpose of a friend function in C++ from the given options. (a) To modify private members of a class without using public methods (b) To make the function inline (c) To make a function static (d) To overload a constructor	*1*	*K1*	*CO3*
6.	Which statement about static member variables is true? (a) They are shared across all instances of the class (b) They can only be accessed by `const` objects (c) They are unique to each object of the class (d) They cannot be initialized inside the class	*1*	*K1*	*CO3*

7.	Select the output of the following code.
	int a = 10;
	int* p = &a;
	cout<< *p;
	(a) 10 (b) Memory address of a (c) *p (d) Error
		1	*K2*	*CO4*

8.	Which is true about dynamic object creation? (a) Objects can’t be created dynamically (b) new returns a reference to the object (c) new returns a pointer to the object (d) Objects can't be deleted	*1*	*K1*	*CO4*

9.	Choose the function that returns a reference to the character at a given position in std::string with bounds checking? (a) operator[] (b) at() (c) charAt() (d) get()	*1*	*K1*	*CO5*
10.	Select the correct option used at compile time to detect logic conditions that must always be true? (a) assert (b) try-catch (c) static_assert (d) cin.fail	*1*	*K1*	*CO6*

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Differentiate between new and delete operators.	*2*	*K2*	*CO1*
12.	List the different types of variable scope in C++.	*2*	*K1*	*CO1*

13.	Write the output of the following switch statement
	int x = 2;
	switch (x) {
	case 1: cout<< "One";
	case 2: cout<< "Two";
	case 3: cout<< "Three";
	default: cout<< "Default";
	}
		2	*K2*	*CO2*

14.	Predict the output of the following pointer program:
	int a = 10;
	int* p = &a;
	cout<< *p;
		2	*K2*	*CO2*

15.	State the use of “this” pointer in C++.	*2*	*K1*	*CO3*
16.	Define a friend function in C++.	*2*	*K1*	*CO3*
17.	Write a C++ code snippet to swap two numbers using pointers.	*2*	*K2*	*CO4*
18.	Differentiate between static and dynamic memory allocation.	*2*	*K2*	*CO4*
19.	Write a short code snippet to swap two std::string variables.	*2*	*K1*	*CO5*
20.	Enumerate the steps to perform random file access using fstream.	*2*	*K1*	*CO5*
21.	Show how try, catch, and throw keywords are used in C++.	*2*	*K2*	*CO6*
22.	Write a short code snippet using assert for runtime condition checking.	*2*	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Discuss the different primitive data types in C++ and how they are used to store data. Provide examples of when to use each data type.	*11*	*K2*	*CO1*
		OR			
	b)	Explain the concept of input and output streams in C++. How do you use cin and cout for basic input and output operations? Provide a simple example program.	*11*	*K2*	*CO1*
24.	a)	Write a C++ program to find GCD of two given numbers “a” and “b”, print the GCD, further using the GCD obtained find LCM of “a “and “b” and print it.	*11*	*K3*	*CO2*
		OR			
	b)	Write C++ Program to explain the different types of loops in C++ (e.g., for, while, do-while). How do you decide which loop to use based on the problem at hand?	*11*	*K3*	*CO2*
25.	a)	Write a program in C++ to find the largest element in the array.	*11*	*K3*	*CO3*
		OR			
	b)	Write C++ code to differentiate between function overloading and constructor overloading in C++.	*11*	*K3*	*CO3*

26.	a)	Write a C++ program to check if the string is palindrome.	*11*	*K3*	*CO4*
		OR			
	b)	Write a C++ program using new and delete operators to manage the memory of a student database containing names and marks of n students entered by the user.	*11*	*K3*	*CO4*
27.	a)	Describe the steps involved in basic file I/O operations in C++ using ifstream and ofstream. Include an example that reads and writes text files.	*11*	*K2*	*CO5*
		OR			
	b)	Compare and contrast std::string and std::wstring. When would you use std::wstring?	*11*	*K2*	*CO5*
28.	a)	Explain different techniques to detect and handle errors in C++. Discuss both compile-time and runtime error detection with suitable code examples.	*11*	*K2*	*CO6*
		OR			
	b)	Compare exception handling with traditional error codes in terms of readability, maintainability, and performance. Which is more scalable for large applications?	*11*	*K2*	*CO6*