Roll No. | 2 | 4 | 9 | 2 | 1 | 1 | 3 |

End Semester Examination June 2025

Name of the Program: BCA
Name of the Course: **Introduction to OOP**
Time: 3 Hours

Semester: *II*
Course *Code:* TBC 202
Maximum Marks: 100

Note:
(i) All the five questions are compulsory.
(ii) Answer any two sub questions among A, B & C in each main question.
(iii) Total marks for each main question are twenty.

Q1		(10X2=20 Marks)	
	A	i. Mention advantages of OOPS approach over procedural programming. ii. Explain working of insertion and extraction operators with the help of suitable example.	CO1
	B	What is static data member? What are the important characteristics of the static member variable? Differentiate between static data member and instance member with proper example.	
	C	i. Briefly explain different types of data types used in C++. How to declare and define wide character data type.(4) ii. Explain the usage of Boolean datatype in C++.(2) iii. Explain the application of the scope resolution operator.(4)	
Q2		(10X2=20 Marks)	
	A	i. Define Operator Overloading. How operator overloading can be done in C++? Support your answer with example. ii. Write a program in for overloading multiplication binary operator.	CO2
	B	Write a program in c++ using constructor and destructor in Multiple and multilevel inheritance.	
	C	i. Write a program to implement array of objects. ii. What is the concept of friend function in C++. Explain its purpose and when it is used in a class. Also write a program to demonstrate the concept of defining one member function of a class as a friend function of another class.	

Q3		(10X2=20 Marks)	
	A	Differentiate the following: i. Function overloading and operator overloading ii. Reference variable and pointer iii. Virtual function and pure virtual function iv. Late binding and early binding	CO3,CO4,CO5
	B	i. Write program to create a class Student which has data member id and name, define overloaded constructor to initialize object and copy constructor to initialize one object by another existing object . ii. Explain the importance of this keyword in c++.	
	C	Write a program to define class Numbers which has two generic type variable x and y; create two objects NUM1 and NUM2 which will accept integer and float type data types using template.	
Q4		(10X2=20 Marks)	
	A	i. Create a base class shape having two data members with two-member function getdata (pure virtual function) and printarea (not pure virtual function). Derive classes triangle and rectangle from class shape and redefine member function printarea in both classes triangle and rectangle and test the functioning of classes using pointer to base class objects and normal objects. ii. Write a program to solve Diamond problem.	CO4,CO6
	B	Explain the Standard Template Library (STL) , highlighting its significance and role in modern C++ programming. Also provide examples of commonly used components of the STL.	
	C	Explain the concept of type conversion. WAP to convert one class type to another class type.	
Q5		(10X2=20 Marks)	
	A	i. Explain the concept of abstract classes and virtual functions. Provide examples to illustrate their usage. Write a program that demonstrates the use of abstract classes and virtual functions.	CO5,CO6
	B	i. What is exception handling? Describe the role	

			of each of the following keywords in C++ exception handling: try, catch, and throw. ii. Implement a program that dynamically allocates memory for an array of integers based on user input . Handle the scenario where the user enters a negative size for the array by throwing an exception and catching it to display an error message.	
	C	i.	Write a program to read and write object values in the file using File Handling.	
		ii.	Explain following function with proper syntax: i. Seekp() ii. Tellg()	