(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

THIRD SEMESTER [B.TECH] FEBRUARY 2023

Paper Code: CIC-211 **Subject: Object Oriented Programming Using C++**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt five questions in all including Q. No.1 which is compulsory. Select one question from each unit.

Q1 Answer **all** the following questions briefly:-
(a) List the features of object oriented programming. (3)
(b) Differentiate between a Constructor and Destructor in context of class and object. (3)
(c) What are various access specifiers in C++? How is protected specifier useful? (3)
(d) What is generic programming? What are its advantages? (3)
(e) How does a compile time polymorphism differ from run time polymorphism? (3)

UNIT-I

Q2 (a) Explain the meaning and syntax of an inline function. Write an inline function in C++. Further, write two situations when an inline function expansion may not work. (8)
(b) What is the difference between call by value and call by reference for a function? Explain with the help of C++ code. (7)

Q3 (a) Write any three features of friend function and explain its functionality using suitable example. Why friend functions should be avoided? (7)
(b) How does C++ support data abstraction and Encapsulation? Appraise with an appropriate example why is it necessary to create good abstraction? (4)
(c) Explain the default parameter value in C++ with an example. (4)

UNIT-II

Q4 (a) What do you mean by an array of objects? Explain how members of objects can be accessed in array of objects with the help of C++ program. (7)
(b) Explain parameterized constructor and copy constructor with an example. (4)
(c) Explain the state, identity and behaviour of an object in C++. (4)

Q5 (a) Explain the concept of operator overloading. Write a code in C++ to add two complex numbers. (7)
(b) What is data hiding? What are the different mechanisms for protecting data from the external users of a class's objects? (4)
(c) Explain dynamic memory allocation in C++. (4)

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UNIT-III

Q6 (a) Difference between overloaded functions and overridden functions. What is ambiguity resolution in class inheritance? When do you encounter such a situation and how it is handled? Explain with an example. (8)

(b) What do you mean by a template member function? Write a program to define the function template for calculating the square of given numbers with different data types. (7)

Q7 (a) Consider an example of declaring the examination result. Design three classes: student, exam and result. The student class has data members such as those representing roll number, names etc. Create the class exam by inheriting the student class. The exam class adds data members representing the marks scored in six subjects. Derive the Result from Exam class and it has its own data members such as total_ marks. Write an interactive program to model this relationship. (8)

(b) What are pure virtual functions? How do they differ from normal virtual functions? (7)

UNIT-IV

Q8 (a) Describe the various components of STL in detail. (8)

(b) Write a C++ program to read the class object of student info such as name, age, gender, height and weight from the keyboard and to store them on a specified file using read() and write() functions. Again the same file is opened for reading and displaying the contents of the file on the screen. (7)

Q9 Write short notes on the following:-

(a) Exception handling in C++ (5)

(b) Generic Classes (5)

(c) Vectors (5)

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