H   Roll No. 2294038

TCS–307

B. TECH. (CSE) (THIRD SEMESTER) MID SEMESTER EXAMINATION, Oct., 2023

OBJECT ORIENTED PROGRAMMING
WITH C++

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Attempt (i) and (ii) both parts (each carries 5 marks) :

(i) "We cannot have multiple variables with the same name in same scope in a C++ program." However, if we wish to have such a scenario, what could be, its solution ? Elaborate the solution using a proper C++ program.

(CO1/CO2)

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(ii) Write a C++ program of rotating an array by k positions. Accept array elements and k from the user.

Example :

input array : [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

and k=3

then, output array : [4, 5, 6, 7, 8, 9, 10, 1, 2, 3]

OR

(b) Write a C++ program to overload ++ operator (prefix and postfix both).

(CO1/CO2)

2. (a) What is an array ? Explain its advantages. Create a 2d array with 4 rows and 3 columns taken from the user. Print the row and column with the maximum sum.

(CO1)

OR

(b) Explain about these with suitable code :

(CO1/CO2)

(i) Inline functions

(ii) Default Arguments

(iii) Static data members

(iv) Header files

3. (a) Explain 4 major concepts of OOPS. Make sure to provide all suitable code with proper explanations.   (CO1/CO2)

OR

(b) Write a program that will take ten strings and sort them in dictionary order. {note : do not use any in-built function].

(CO1/CO2)

4. (a) Write a C++ program to demonstrate how a banking system works. Customers provide information such as their customs name, account number, balance, and country name to the bank. We assumed the clients were all from India. To perform various operations in a banking system, functions such as insert( ), deposit( ), withdrawal( ), checkBalance( ), and display( ) are available. Using the deposit( ) and withdrawal( ) methods, we can deposit and withdraw money from our account. The insert( ) method is used to assign various customer details, and the display( ) method is used to display

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customer details. The checkBalance( ) method returns the current balance of customer's account.

Write a C++ program to design the scenario described above. Also, adhere to the best memory management approach.

(CO2)

OR

(b) What is a friend function ? Write a C++ program to add 2 private variables belonging to 2 different classes using friend function.   (CO2)

5. (a) Discuss Destructors using C++ code. Explain three differences between constructors and destructors. Which sequence do destructors follow when multiple objects leave the scope ?   (CO2)

OR

(b) Attempt (i) and (ii) both parts (each carries 5 marks) :   (CO2)

(i) How will a programmer copy the values of data members from one

object to another during instantia-
tion ? Write a program to solve this
problem.

(ii) What is the issue that arises when the
name of a member function's local
variable becomes the same as the
name of the instance variable ? How
do programmers deal with this
problem ? Discuss with the help of
C++ Program.   (CO2)