

**VIT**

Vellore Institute of Technology

Slot : F2**School of Computer Science Engineering and Information Systems****Winter Semester 2024-2025****Continuous Assessment Test – II****Programme Name & Branch: M.Tech (SE)****Course Name & code : ICSE102L & Structured and Object Oriented Programming****Class Number (s) : VL2024250504147, VL2024250504161, VL2024250504157, VL2024250504152****Faculty Name (s): Dr. Jothish Kumar M, Dr. P. Shunmuga Perumal ,Dr. Malathy E, Dr. Nancy Victor****Exam Duration: 90 Min.****Maximum Marks: 50****General instruction(s):**

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes
 2. Recognize the application of modular programming approach; Create user defined data types and idealize the role of pointers.
 3. Comprehend various elements of object-oriented programming paradigm; propose solutions through inheritance and polymorphism; identify the appropriate data structure for the given problem and devise solution using generic programming techniques.

Q.No.	Question	Max Marks	CO	BL
1.	Create an <u>employee</u> structure with members that include the <u>employee ID</u> , <u>name</u> , and <u>salary</u> . Create another <u>address</u> structure that includes information such as the <u>door number</u> , <u>street name</u> , <u>city</u> , and <u>postcode</u> . Declare the address structure and its members <u>inside</u> the employee structure. Write a C program that accepts the details of 'n' employees [Employee ID and salary] and displays the information of the employee with the highest salary.	10	CO2	BL4
2.	(a) Create a C program to find the maximum value in an array using pointers. (b) Write a C program to reverse the elements of the array using pointers.	5 5	CO2	BL3
3.	Using C++, define a class " <u>Student</u> " to check whether a student is eligible for taking admission in <u>class XI</u> with the following specifications: <u>private</u> data members: <u>String name</u> [to store name], <u>int mm</u> [to store marks secured in Maths], <u>int scm</u> [to store marks	10	CO3	BL4

secured in Science], int comp [to store marks secured in Computer].
 Member methods: Student() parameterised constructor to initialize the data members by accepting the details of a student, method check() to check the eligibility for course based on the table given below, void display() to print the eligibility by using check() function in nested form.

Marks	Eligibility
90% or more in all the subjects	Science with Computer
Average marks 90% or more	Bio-Science
Average marks 80% or more and less than 90%	Science with Hindi

4. (a) You are developing a system using C++ to manage a library's book inventory. The system needs to keep track of the total number of books in the library across all categories. The Book class should have a constructor that increments the total count when a new book is created. Implement a static function in the Book class that returns the total count of books. The count should be updated whenever a new book is added to the inventory.
- (b) Explain why default arguments in C++ must be specified from right to left in a function parameter list. Provide an example of what happens if this rule is violated.

5. Imagine you're developing a banking system using C++ with two classes: Account and BankManager. The Account class has private members for account number, balance, and account holder's name. The BankManager class needs to access these private members to perform operations like deposit, withdrawal, and displaying account details. Ensure that the account details are encapsulated within the Account class. Make the BankManager class a friend of the Account class so it can access the private members. Implement methods in BankManager to deposit, withdraw, and display account details.