Reg. No.															

B.Tech./M.Tech(Integrated) DEGREE EXAMINATION, JULY 2023

Second /Third Semester

21CSC101T - OBJECT ORIENTED DESIGN AND PROGRAMMING

(For the candidates admitted from the academic year 2021-2022 & 2022-2023)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part – B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours Max. Marks: 75

PART – A (20 × 1 = 20Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. A member function can always access the data (A) in the object of which it is a member (B) in the class of which it is a member (C) in any object of the class of which it is a member (D) in the public part of its class	1	2	1	2
2. The Unified Modeling Language is _____. (A) a program that builds physical models (B) a way to look at the organization of a program (C) the combination of C++ and FORTRAN (D) helpful in developing software systems	1	1	1	2
3. A variable defined within a block is visible (A) from the point of definition onward in the program (B) from the point of definition onward in the function (C) from the point of definition onward in the block (D) throughout the function	1	2	1	2
4. Which of the following is the perfect set of operators that can't be overloaded in C++? (A) +=, ?, :: , >> (B) >>, <<, ?, *, sizeof() (C) :: , . , .* , ?: (D) :: , ->, * , new, delete	1	2	1	3
5. Which of the following is true about constructors? (A) A class can have more than one constructor (B) They cannot be inherited (C) Their address can be referred (D) Constructors can have return values	1	1	2	3
6. Which of the following keyword is used to overload an operator? (A) overload (B) operator (C) friend (D) overrider	1	3	2	1
7. Overload an operator by naming it a (A) variable (B) built-in type (C) function (D) class	1	1	2	3

8. Dynamic aspects related to a system are shown with help of 1 2 2 3
   (A) sequence diagrams (B) interaction diagrams
   (C) deployment diagrams (D) use case diagrams

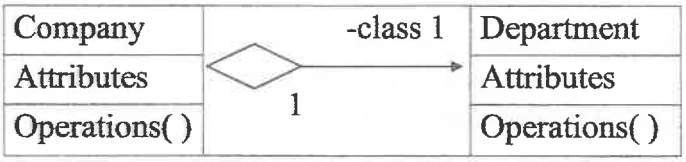
9. Use of pointers or reference to an abstract class gives rise to which among the following feature? 1 2 3 2
   (A) Static Polymorphism (B) Runtime polymorphism
   (C) Compile time Polymorphism (D) Polymorphism within methods

10. How can you make the private members inheritable? 1 2 3 2
   (A) By making their visibility mode as public only (B) By making their visibility mode as protected only
   (C) By making their visibility mode as private in derived class (D) It can be done both by making the visibility mode public or protected

11. Which of the following Combines two concurrent activities and re-introduces them to a flow where only one activity can be performed at a time? 1 3 3 2
   (A) Joint symbol (B) Fork symbol
   (C) Decision symbol (D) Note symbol

12. Name the function whose definition can be substituted at a place where its function call is made? 1 3 3 2
   (A) friends function (B) inline function
   (C) volatile function (D) external function

13. What type of core-relationship is represented by the symbol in the figure below? 1 3 4 2



   (A) Aggregation (B) Dependency
   (C) Composition (D) Association

14. _____ statement is used to catch all types of exceptions. 1 2 4 3
   (A) catch() (B) catch(Test t)
   (C) catch(...) (D) Exception()

15. _____diagram in UML shows a complete of a modeled system at a specific time. 1 2 4 3
   (A) Sequence (B) Class diagram
   (C) Collaboration (D) Object

16. In component diagrams, building block which is represented with two rectangles laid on left side is classified as 1 3 4 3
   (A) type of components (B) interfaces
   (C) dependency relationships (D) State dependency

17.	What kind of library is Standard Template Library? (A) Polymorphic (B) Generic (C) Both Polymorphic & Generic (D) Void	1	2	5	3
18.	What type of access does deque and vector provide? (A) Linear access (B) Random access (C) Parallel access (D) Sequence access	1	2	5	3
19.	Which operator is used to insert the data into file? (A) >> (B) > (C) < (D) <<	1	3	5	2
20.	Which function is used to position back from the end of file object? (A) seekg (B) seekp (C) grepv (D) execvp	1	3	5	2

PART – B (5 × 8 = 40 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
21. a.	With a suitable example C++ program explain how to design a class. Give all possible representation in a class (such as: name, attribute, visibility, methods, and responsibilities).	8	3	1	2
	(OR)				
b.	Design and illustrate the use case model for activities involved in ordering food in a restaurant from the point when the customer enters a restaurant to the point when he leaves the restaurant.	8	3	1	2
22. a.	Create a C++ program that simulates a bookstore inventory system. Design a class called "Book" with attributes such as title, author, and price. Implement constructors, including a default constructor, a copy constructor and a parameterized constructor, to initialize book objects and display their information.	8	3	2	3
	(OR)				
b.	List out the types of Interaction diagram and Notations. Draw the collaboration diagram for Flight Ticket Reservation System.	8	3	2	3
23. a.	Create three classes with names Shape, Rectangle and Circle and make use of the functions getdata(), printdata(), and area(). To find the area of circle and rectangle, type of inheritance is Hierarchical? Explain with output?	8	3	3	2
	(OR)				
b.	Draw the State chart diagram with three different states for Order Management System. The customers should be able to book the orders in Online Order Management System. The diagram should have joint pseudostate, self-transistion, entry and exit connectors, choice pseudostate etc.	8	3	3	3

24. a.	Write a simple Calculator Program to performing the four basic arithmetic operations in C++ using a class template. Constructor of this class takes two arguments of generic datatypes. Calculator class template consists of five main functions – show(), addition(), subtraction(),multiplication(), and division(). The show() function is responsible for calling the rest of the four generic functions.	8	3	4	2
	(OR)				
b.	Discuss Component diagram and Deployment diagram. Illustrate the notations of Component and Deployment diagram for Vehicle Registration System.	8	3	4	2
25. a.	Explain the various functions given below related to Algorithms in Standard Template Library (STL) .Discuss with syntax and example program. • Count() • Merge() • Sort() • Search()	8	3	5	4
	(OR)				
b.	Elaborate in detail about Associative Containers: Map, Multi-map and Set, Multi-set with example program?	8	3	5	4

PART – C (1 × 15 = 15 Marks) Answer **ANY ONE** Questions	**Marks**	**BL**	**CO**	**PO**
26. Consider a scenario where you are developing a banking application in C++. How does the implementation of object-oriented programming concepts such as classes, objects, inheritance, and polymorphism contribute to creating a robust and flexible banking system? Highlight comments the use of encapsulation, constructors, methods, and objects to implement OOP concepts in the Program.	15	4	1	3
27. Define method overloading. Develop a C++ program that utilizes function overloading to calculate the volume of different geometric shapes, such as cubes, cylinders, and spheres. Implement functions with (i) Different number of arguments with same return types (ii) Same number of Arguments with different return types to handle each shape's specific calculations.	15	3	2	3

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