SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Ramapuram Campus, Bharathi Salai, Ramapuram, Chennai - 600089

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

DEGREE / BRANCH: B.Tech-IT

III SEMESTER

SUB CODE – SUBJECT NAME

18CSC202J - OBJECT ORIENTED DESIGN AND PROGRAMMING

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SUBJECT : 18CSC202J - OBJECT ORIENTED DESIGN AND PROGRAMMING

SEM/YEAR: III/II

Course Outcomes

CO-1: Identify the class and build domain model
CO-2 : Construct programs using method overloading and operator overloading
CO-3 : Create programs using inline, friend and virtual functions, construct programs using standard templates
CO-4 : Construct programs using exceptional handling and collections
CO-5 : Create UML component diagram and deployment diagram
CO-6 : Create programs using object oriented approach and design methodologies

UNIT I

Comparison of Procedural and Object Oriented Programming- OOPS and its features - I/O Operations, Data Types, Variables, static - Constants, Pointers, Type Conversions - Features: Class and Objects - UML Diagrams Introduction- Feature :Class and Objects - Examples of Class and Objects - UML Class Diagram and its components - Class Diagram relations and Multiplicity - Feature Abstraction and Encapsulation - Application of Abstraction and Encapsulation - Access specifiers – public, private - Access specifiers - protected, friend, inline - UML use case Diagram, use case, Scenario - Use case Diagram objects and relations - Method, Constructor and Destructor - Method, Constructor and Destructor

PART-A (Multiple Choice Questions)

Q. No	Questions	Course Outcome	Competence BT Level
1	**Which of the following explains Polymorphism?** A) intfunc(int, int); Float func1(float,float); B) intfunc(int); Intfunc(int); **C) intfunc(float); Intnew_func();** D) intfunc(); Intnew_func();	CO1	2
2	Find how many bytes are occupied by the following data types in a 32-bit system. A) Type int B) Type long double **C) Type float** D)Type long	CO1	4
3	Which of the following is a important role of a function? A. give a name to a block of code B, reduce program size C. accept arguments and provide a return value **D. help organize a program into conceptual units**	CO1	4

4	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.**	CO1	1
5	In C++, a function contained within a class is called ……. **A. a member function** B. an operator C. a class function D. a method	CO1	1
6	What happens if the base and derived class contains definition of a function with same prototype? A. Compiler reports an error on compilation B. Only base class function will get called irrespective of object C. Only derived class function will get called irrespective of object **D. Base class object will call base class function and derived class object will call derived class object will call derived class function**	CO1	4
7	Which one of the following option is correct about the statement given below? The compiler checks the type of reference in the object and not the type of object A. inheritance **B. Polymorphism** C. Abstraction D. Encapsulation	CO1	4
8	Which of the following functions are performed by a constructor? A) Construct a new class B) Construct a new object C) Construct a new function **D) Initialize objects**	CO1	4
9	Which of the following is the correct class of the object cout A) iostream B) istream **C) ostream** D) ifstream	CO1	2
10	In UML, diagrams which captures system static structure and provide foundation for other models is called ..... A) Deployment diagram **B) Class diagram** C) Component diagram D) Object diagram	CO1	2
11	Find the error produced by compiler when private members are accessed? **A) Can't access private message** B) Code unreachable C) Core dumped D) Bad code	CO1	4

12	Choose the default access specifier for the class member A) public **B) private** C) protected D) None of the above	CO1	1
13	Which of the following is CPP style type-casting? A) per=total/ (float)m **B) per=total/float(m)** C) per = (float)total/m D) None of these	CO1	1

14	What is the output of the following program?
	#include<iostream>
	using namespace std;
	void main()
	{
	char s() = "SRM";
	*s = 'R';
	cout<<s<<endl;
	}
	A) RRM
	B) SRM
	C) SRR
	D) None of these
		CO1	4

15	What does the following statement mean? int (*fp)(char*) A) pointer to a pointer B) pointer to an array of chars **C) pointer to function taking a char* argument and returns an int** D) function taking a char* argument and returning a pointer to int	CO1	4
16	Which of the following concepts of OOPS means exposing only necessary information to client? A) Encapsulation **B) Abstraction** C) Polymorphism D) Data binding	CO1	2
17	Which of the following is illegal? A) int *ip; B) string s, *sp = 0; **C) int i; double* dp = &i;** D) int *pi = 0;	CO1	4
18	Which member can never be accessed by inherited classes? **A) Private member function** B) Public member function C) Protected member function D) All can be accessed	CO1	1

19	Analyze the code and choose the correct
	int a=100, b=200;
	int *p=&a, *q=&b;
	p=q;
	
	A) b is assigned to a
	B) p now points to b
	C) a is assigned to b
	D) q now points to a
		CO1	4

20	Mention the size_t integer type in C++ is? A) Unsigned integer of at least 64 bits B) Signed integer of at least 16 bits **C) Unsigned integer of at least 16 bits** D) Signed integer of at least 64 bits	CO1	2
21	Which among the following is not a property of an object? a) Identity b) Properties c) Attributes **d) Names**	CO1	1

22	Which is most appropriate comment on following class definition?
	class Student
	{
	int a;
	public : float a;
	};
	a) Error : same variable name can't be used twice
	b) Error : Public must come first
	c) Error : data types are different for same variable
	d) It is correct
		CO1	5

23	Instance of which type of class can't be created? a) Anonymous class b) Nested class c) Parent class **d) Abstract class**	CO1	2

24	What is the output of following code?
	int n=10; // global
	class A()
	{
	private : int n;
	public : int m;
	A()
	{
	n=100; m=50;
	}
	void disp()
	{ cout<<"n"<<m<<n;
	};
	a) 1050100
	b) 1005010
	c) n5010
	d) n50100
		CO1	5

25	Find the output of the following program.
	class education
	{
	char name[10];
	public : disp()
	{
	cout<<"Its education system";
	}
	class school:public education
	{
	public: void dsip()
	{
	cout<<"Its school education system";
	}
	};
	void main()
	{
	school s;
	s.disp();
	}
	}
	a) Its school education system
	b) Its education system
	c) Its school education systemIts education system
	d) Its education systemIts school education system
		CO1	5

PART B (4 Marks)			
1	How can we prevent a class from instantiation?	CO1	2
2	Construct Use-case diagram for an Online Shopping Application	CO1	3
3	List out the difference between procedure oriented programming & Object oriented programming	CO1	1
4	Write syntax of class, objects and methods and explain with example.	CO1	2

5	Write a C++ program to generate factorial of a number using class	CO1	3
6	Write an example program to demonstrate type conversions and explain	CO1	2
7	Consider a Banking System. Identify three entities in the system which can be represented using classes and show the relationship between them using UML class diagrams	CO1	6
8	What is a constructor? What are its uses?	CO1	2
PART C (12 Marks)			
1	Write the problem statement for Library Management system. Design UML Class diagram and explain its components	CO1	6
2	There are 50 computers available in computer programming lab where each computers are used six hours per day. Write a C++ program using classes and objects that contain getDetail() for getting input from user, calculate second per Day() for calculating the usage of each computer in seconds per day ,calculateminutesperWeek() for calculating the usage of each computer in minutes per week ,calculatehourperMonth() for calculating usage of each computer in hour per month and calculatedayperYear() for calculating usage of each computer in day per year	CO1	6
3	Give example for cast? Explain OOPS features with suitable example.	CO1	2
4	A University conducts examinations and the results are announced. Prepare a report for the following: • Print the marks in the register number order semester wise for each department • Print the Arrear list semester wise. • Prepare a Rank list for each department.	CO1	3
5	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, which type of inheritance is suitable? Why? Explain?	CO1	6

UNIT II			
Types of constructor (Default, Parameter), Static and copy constructor - Feature Polymorphism: Constructor overloading, Method Overloading - Example for method overloading, Method Overloading: Different parameter with different return values - Operator Overloading and types, Overloading Assignment Operator - Overloading Unary Operators, Example for Unary Operator overloading - Overloading Binary Operators, Example for Binary Operator overloading - UML Interaction Diagrams, Sequence Diagram - Collaboration Diagram, Example Diagram - Feature: Inheritance, Inheritance and its types			
PART-A (Multiple Choice Questions)			
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	While overloading binary operators using member function, it requires ___ arguments. a. Zero b. **One** c. Two d. Three	CO2	BT1

2	Which of the followings are true about constructors? A. A class can have more than one constructor. B. They can be inherited. C. Their address can be referred. D. Constructors cannot be declared in protected section of the class. E. Constructors cannot return values. a. Only A, B, D b. A,B,D,E c. A,C,E d. **A,D,E**	CO2	BT1
3	Which of the following keyword is used to overload an operator? a. overload b. **operator** c.friend d.overrider	CO2	BT1
4	What will happen if a class is not having any name? a. it cannot have a destructor b. It cannot have a constructor. c. It is not allowed. d. **Both A and B**	CO2	BT1
5	Which inheritance type is used in the class given below? class A : public X, public Y a. Multilevel inheritance b. **Multiple inheritance** c. Hybrid inheritance d .Hierarchical Inheritance	CO2	BT1
6	Which of the following operators cannot be overloaded? a. [] b. ->* c. **?:** d. *	CO2	BT1
7	In which of the following a virtual call is resolved at the time of compilation? a. From inside the destructor. b. From inside the constructor. c. From inside the main (). d. **Both A and B**	CO2	BT2
8	Which of the following operator is overloaded for object cout? a. >> **b. <<** c. + d. =	CO2	BT1
9	Assume class TEST. Which of the following statements is/are responsible to invoke copy constructor? a. TEST T2 (T1) b. TEST T4 = T1 c. T2=T1 d. **Both A and B**	CO2	BT2

10	Which of the following is the perfect set of operators that can't be overloaded in CPP? a. +=, ?, :: , >> b. >>, <<, ?,*,sizeof() **c. ::, ., .*, ?:** d. ::, ->, *, new delete	CO2	BT2
11	How many operators are supported by C++? a. 30 operators b. 40 operators **c. 45 operators** d. 65 operator	CO2	BT1
12	A non-member function that is given access to all members of a class within it is declared, is called a. Access function **b. Friend function** c. Operator functions d. None of them	CO2	BT1
13	Which of the following operators should be preferred to overload as a global function rather than a member method? a. Postfix ++ b. Comparison Operator c. **Insertion Operator <<** d. Prefix++	CO2	BT1
14	We can overload which of the following C++ operators a. **Arithmetic operator (+, -, *, /)** b. Class Member Access Operators (., .*) c. Size operator (sizeof) d. Conditional operator (?:)	CO2	BT2
15	Operator overloading is also called …….. polymorphism a. run time b. initial time c. **Compile time** d. Completion time	CO2	BT1
16	Operator overloading is done with the help of a special function called ……, which describes the special task of an operator. a. overloading function b. special task function c. detail function d. **operator function**	CO2	BT1
17	Overload an operator by naming it a a. variable b. built-in type c. **function** d. class	CO2	BT1
18	Which of the function operator cannot be over loaded a. <= b. **?:** c. == d. *	CO2	BT2

19	Kind of diagrams which are used to show interactions between series of messages are classified as a. activity diagrams b. state chart diagrams **c. collaboration diagrams** d. object lifeline diagrams	CO2	BT1
20	Dynamic aspects related to a system are shown with help of a. sequence diagrams b. **interaction diagrams** c. deployment diagrams d. use case diagrams	CO2	BT1
21	Determine which diagrams are used to show interactions between series of messages a.Activity diagrams b. State Chart diagrams c. **Collaboration diagrams** d. Object Lifeline diagrams	CO2	BT1
22	Identify the syntax of overloading operator + for class A? **a.A operator + (arg_list){}** b. A operator [+] (arg_list){} c. int +(arg_list){} d. int [+](arg_list){}	CO2	BT1
23	Classify three different types of message arrows a. Synchronous, asynchronous, asynchronous with instance creation b. Self, multiplied, instance generator **c. Synchronous, asynchronous, synchronous with instance creation** d. None of the above	CO2	BT1
24	**Which feature of OOP indicates code reusability?** a. Abstraction b. Polymorphism c. Encapsulation d. **Inheritance**	CO2	BT1
25	**For constructor overloading, each constructor must differ in _____ and _____** a. **Number of arguments and type of arguments** b. Number of arguments and return type c. Return type and type of arguments d. Return type and definition	CO2	BT1
	PART B (4 Marks)		
1	What is the necessity of constructor overloading?	CO2	BT2
2	Categorize the types of Constructors	CO2	BT1
3	Define method overloading. Write a program to implement method overloading with different number of arguments and same return types	CO2	BT3
4	Write down the restrictions on Operator overloading	CO2	BT2
5	Can we have virtual destructors? If so what is the use of virtual destructors.	CO2	BT3
6	Define collaboration diagram with its notation	CO2	BT1

7	Explain the modes of inheritance with an example	CO2	BT2

8	Judge the output of the following C++ code?
	#include <iostream>
	using namespace std;
	class Integer
	{ int i;
	public: Integer(int ii) : i(ii) {}
	const Integer
	operator+(const Integer&rv) const
	{
	cout<< "operator+" <<endl;
	return Integer(i + rv.i);
	}
	Integer&
	operator+=(const Integer&rv)
	{
	cout<< "operator+=" <<endl;
	i += rv.i; return *this;
	} };
	int main()
	{
	int i = 1, j = 2, k = 3;
	k += i + j;
	Integer ii(1), jj(2), kk(3); kk += ii + jj;
	}
		CO2	BT4

9	Relate the differences between constructors and destructors	CO2	BT2
10	Define overloading unary and binary operators with an example	CO2	BT2
	PART C (12 Marks)		
1	Define UML Sequence diagram with its notations. Draw the sequence diagram for Online hotel management	CO2	BT4
2	Write a C++ program for Constructor overloading (parameterized, default and copy)	CO2	BT3
3	Define Sequence and Collaboration diagram. Draw the sequence and collaboration diagram for ATM amount withdrawal	CO2	BT4
4	Define interaction diagram. Draw an Sequence diagram for online hospital management	CO2	BT4
5	Explain in detail about operator overloading and its types with example	CO2	BT3

UNIT III			
Feature Inheritance: Single and Multiple, Inheritance: Multilevel, Hybrid, Hierarchial-Advanced Functions: Inline, Friend- Advanced Functions: Virtual, Overriding- Advanced Function: Pure Virtual function- Example for Virtual and pure virtual function- Abstract class and Interface- UML State Chart Diagram- UML Activity Diagram			
PART-A (Multiple Choice Questions)			
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**

1	**Diagrams which are used to distribute files, libraries and tables across topology of hardware are called?** a) deployment diagrams b) use case diagrams c) sequence diagrams d) collaboration diagrams Ans: d	C04	BT 1
2	**Name the function whose definition can be substituted at a place where its function call is made: ?** a) friends function b) inline function c) volatile function d) external function Ans: b	C04	BT 2
3	**Activity diagram, use case diagram, collaboration diagram and sequence diagram are considered as types of ?** a) non-behavioral diagrams b)nonstructural diagrams c) structural diagrams d) behavioral diagrams Ans: d	C04	BT 2
4	**Use of pointers or reference to an abstract class gives rise to which among the following feature?** a) Static Polymorphism b) Runtime polymorphism c) Compile time Polymorphism d) Polymorphism within methods Ans: b	C04	BT 3
5	**Which diagram in UML shows a complete or partial view of the structure of a modeled system at a specific time?** a) Sequence Diagram b) Collaboration Diagram c) Class Diagram d) Object Diagram Ans: d	C04	BT 2
6	**Can abstract class have main () function defined inside it?** a) Yes, depending on return type of main() b) Yes, always c) No, main must not be defined inside abstract class d) No, because main() is not abstract function Ans: b	C04	BT 1
7	**If there is an abstract method in a class then, _____** a) Class must be abstract class b) Class may or may not be abstract class c) Class is generic d) Class must be public Ans: a	C04	BT 1

8	**Which of the following UML diagrams has a static view?** a) Collaboration b) Use case c) State chart d) Activity Ans: b	C04	BT 1
9	**11. Which keyword is used to declare the friend function?** a) friend b) friend c) classfriend d) myfriend Ans: b	C04	BT 2
10	**Which of the following cannot be used to declare a class as a virtual?** a) Methods b) Properties c) Events d) Fields Ans: d	C04	BT 2
11	**Which of the given modifiers can be used to prevent Method overriding?** a) Static b) Constant c) Sealed d) final Ans: c	C04	BT 1
12	**Which problem arises due to multiple inheritances, if hierarchical inheritance is used previously for its base classes?** a) Diamond b) Circle c) Triangle d) Loop Ans: a	C04	BT 2
13	**How many classes should a program contain to implement the multiple inheritance?** a) Only 1 b) At least 1 c) At least 3 d) Exactly 3 Ans: c	C04	BT 1
14	**How many basic types of inheritance are provided as OOP feature?** a) 4 b) 3 c) 2 d) 1 Ans: a	C04	BT 1

15	**How can you make the private members inheritable?** 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 Ans: d	C04	BT 1
16	**Which access type data gets derived as private member in derived class?** a) Private b) Public c) Protected d) Protected and Private Ans: a	C04	BT 1
17	**Which programming language doesn't support multiple inheritances?** a) C++ and Java b) C and C++ c) Java and Small Talk d) Java Ans: d	C04	BT 2
18	**Which among the following best defines single level inheritance?** a) A class inheriting a derived class b) A class inheriting a base class c) A class inheriting a nested class d) A class which gets inherited by 2 classes Ans: b	C04	BT 2
19	**Is it compulsory to have constructor for all the classes involved in multiple inheritance?** a) Yes, always b) Yes, only if no abstract class is involved c) No, only classes being used should have a constructor d) No, they must not contain constructors Ans: b	C04	BT 2
20	**Can the derived class be made abstract if multiple inheritances is used?** a) No, because other classes must be abstract too b) Yes, if all the functions are implemented c) Yes, if all the methods are predefined d) No, since constructors won't be there Ans: d	C04	BT 2
21	**Which keyword is used to declare the friend function?** a) firend b) friend c) classfriend d) myfriend Ans:d	C04	BT 1

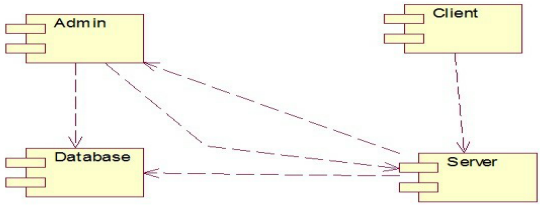
22	**Pick out the correct option.** a) We cannot make an instance of an abstract base class b) We can make an instance of an abstract base class c) We can make an instance of an abstract super class d) We can make an instance of an abstract derived class Ans:a	C04	BT 1
23	**Which is used to create a pure virtual function?** a) $ b) =0 c) & d) ! Ans:b	C04	BT 3
24	**Which is also called as abstract class?** a) virtual function b) pure virtual function c) derived class d) base class Ans:b	C04	BT 3
25	**What is the syntax of friend function?** a) friend class1 Class2; b) friend class; c) friend class d) friend class() Ans:a	C04	BT3
PART B (4 Marks)			
1	Explain Virtual Function	CO2	BT2
2	What is pure virtual function?	CO2	BT2
3	Explain the notations of Activity Diagram and Statechart Diagram	CO4	BT3
4	What is Inheritance?Benefits of Inheritance?	CO2	BT2
5	Describe the types of inheritance?	CO2	BT3
6	Difference between Virtual Function and Pure Virtual Function.	CO2	BT2
7	Explain about Abstract Class and Interface.	CO3	BT2
8	What is friend function and friend class?	CO3	BT2
PART C (12 Marks)			
1	Draw UML state chart and Activity Diagram for ATM Machine	CO4	BT4
2	Describe in detail about advanced friend function and friend class with example?	CO2	BT2
3	Describe Multilevel Inheritance with example program?	CO2	BT3
4	Explain Pure Virtual Function with example program?	CO3	BT2

5	Draw UML state chart and Activity Diagram for Library Management System	CO4	BT4

UNIT IV			
Generic – Templates : Introduction - Function Template – Example programs : Function Templates - Class Template – Example programs : Class Templates – Exceptional Handling : try and catch – Multilevel exceptional – throe and throws – finally – User defined exception – Example programs using C++ - Dynamic modelling : Package Diagram – UML Component diagram – Deployment Diagram – Example : Package, Deployment, Component diagram.			
PART-A (Multiple Choice Questions)			
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	**The STL can be used as a standard approach for----------** a) Storing and sorting **b) Storing and processing data** c) data processing only d) storing only	CO3	1
2	**Name the Container which uses both stack and queue.** a) storage b) linked list c) queuing d) **Deque**	CO3	1
3	**Identify the characteristics of vector container.** **a) Relocating, expandable array** b) Fixed size c) Doubly linked list d) link vector	CO3	2
4	**Associative container uses---------to access data.** a) queue **b) Keys** c) stack d) string	CO3	1
5	**Class templates are generally used for--------** **a) Data storage** b) debug c) fixed data type d) storage	CO3	1
6	**In UML, Templates are also called as--------** a) container b) Modified **c) Parameterized** d) generic	CO3	1
7	**Identify the validity of template parameters?** **a) inside that block only** b) inside the class c) whole program d) inside the main class	CO3	2

8	**Identify which among the following is not correct.** a) **template <class T> func(T x) {}** b) template <class T> class myObject {}; c) template <class T> class myObj { template <class R> memFunc() {} }; **d)** All of the above are correct	CO3	2
9	**Examine whether templates are conceptually related to polymorphism?** a) Not Related b) Only when the template types are objects **c) Yes, but compile-time polymorphism** d) Yes, but run-time polymorphism	CO3	2
10	**Identify an invalid template declaration.**[L2, R5-683] a) template <int x> int func() {return x;} **b) template <double x> double func() {return x;}** c) template <typename x> void func(x t) {} d) It is not possible in CPP to restrict a function	CO3	2
11	**Explore the correct statement about string template?** a) It is used to replace a string. **b) It is used to replace a string with another string at runtime.** c) It is used to delete a string. d) None of the above	CO3	2
12	**_____type of program can be included in try block?** a) static memory allocation b) **dynamic memory allocation** c) const reference d) pointer	CO4	1
13	**---------statement is used to catch all types of exceptions.** a) catch() b) catch(Test t) c) **catch(…)** d) no one of the mentioned	CO4	1
14	**The ---------- class name must be included in the class in which it is located.** a) try b) **Exception** c) catch d) template	CO4	1
15	**Select the ways to represent nodes in a deployment diagram?** a) Nodes instances are underlined identifiers of the form name:type b) The name may be left off, indicating an unnamed instance of the type c) The type may be left off, indicating a named instance with an unspecified type d)**All of the mentioned**	CO5	1
16	**___ __ specifies additional detail about UML element**. **a) Stereotype** b) container c) associative container d) data processing	CO5	1

17	**-------- is visible only to its containing package and to its nested** **a) package.** b) protected c) public **d) Private** package	CO5	1
18	**Notation is used to specify the required and provided interfaces of the components. The interfaces between the components are named as----** **a) Assembly connectors** b) cooling controllers c) Environmental controller d) Plan analyst	CO5	1
19	**List the 3 essential elements of a deployment diagram.** **a) Artifacts, nodes and connections.** b) stack, queue, deque c) memory, database, connections d) package, element, deployment	CO5	1
20	**Activity, use case diagram, collaboration diagram and sequence diagram are categorized as _____.** a) non-behavioral diagrams b) non structural diagrams c) structural diagrams **d) Behavioral diagrams**	CO5	1
21	**Recognize which diagram is used to distribute files, libraries and tables across topology of hardware?** **a) Deployment diagrams** b) use case diagrams c) sequence diagrams d) collaboration diagrams	CO5	2
22	**List the essentials in package diagram** **a) Package notation, element visibility, dependency relationship** b) package notation, sequence, dependency relationship c) Dependency, element visibility d) package, deployment, sequence	CO5	1
23	**Good packages are---------coupled and highly cohesive among the elements in package.** a) Tightly b) highly **c) loosely** d) semi	CO5	1

24	**Identify the core element of UML in the below figure?**  a) Node b) Interface c) Class **d) Component**	CO5	2
25	**Recognize the UML diagram shown below?**  **a) Component** b) Deployment c) Use case d) DFD	CO5	2
	PART B (4 Marks)		
1	What do you mean by Generic Programming? What are its advantages and state few applications?	CO3	1
2	Define a Class Template. Write a suitable example program.	CO3	2
3	What is a Function Template? Illustrate with a suitable example program.	CO3	2
4	What do you mean by Overloaded Function Template? What are the rules to be followed to select a suitable template?	CO3	1
5	Distinguish between overloaded functions and function templates	CO3	2
6	What is the need for template function in C++? What are the advantages?	CO3	1
7	Give the differences between Class template and Function template.	CO3	2
8	What is an exception? How it is handled in C++?	CO4	1
9	Write a program to demonstrate the concept of rethrowing an exception.	CO4	3
10	What are the two kinds of exception?	CO4	1
11	Illustrate multiple catch statements with a suitable example.	CO4	2
12	When should a function throw an exception? Give an example to illustrate it.	CO4	2
13	What is uncaught_exception() function? why do we need it?	CO4	2
14	When do we need multiple catch Handlers? Give an example.	CO4	2

15	What are standard exceptions? List the types of exception and specify the position when it was generated?	CO4	1
16	What is a component diagram and state its artifacts.	CO5	1
17	Define Deployment diagram. State the artifacts to be identified before drawing a Deployment diagram.	CO5	1
18	What are the uses of the Component diagram and Deployment diagram?	CO5	2
19	Give the notations of Component diagram and Deployment Diagram	CO5	1
20	Define a Package Diagram. Give the advantages of using a Package diagram.	CO5	1
	PART C (12 Marks)		
1	Discuss in detail on Class Template with a suitable example.	CO3	2
2	What is a Function Template? Discuss in detail with a suitable program.	CO3	2
3	Write a program which generate a template class by which one can perform integer type data addition and float type data addition.	CO3	3
4	Discuss in detail on Overlading Function template. Illustrate it with a suitable program.	CO3	2
5	Explain how the Class Template can be used with Operator overloading with a program.	CO3	2
6	Write a C++ program to develop a Simple Calculator to perform arithmetic operations using Class Template.	CO3	3
7	What is an exception? How it is handled in C++ programs? Explain how the control is transferred when exceptions occur during programs execution. Write a program to illustrate exception handling.	CO4	2
8	Write a program to show how to restrict the types of exceptions that can be thrown by a function.	CO4	3
9	Write a program to show how to rethrow an exception.	CO4	3
10	Write a C++ program to demonstrate the use of try, catch , throw and nested try.	CO4	3
11	What is a user defined exception. Write down the scenario where we require user defined exceptions.	CO4	2
12	When do we need multiple catch blocks for a single try block? Write a program to illustrate it.	CO4	2

13	Explain in detail on the use of Multiple catch statements in a program with a suitable example. Discuss the importance of "catch all exception" with a program.	CO4	2
14	Explain Deployment Diagram with a suitable example.	CO5	2
15	What is a Package Diagram. Illustrate it with a suitable example.	CO5	2
16	Draw the Component, Deployment and package diagram for the ATM Banking system. Explain the system with the notations used in each diagram.	CO5	3
17	Design the Component, Deployment and package diagram for the Airline Reservation system. Explain the system with the notations used in each diagram.	CO5	3
18	Explain the Component, Deployment and package diagram for the Course Registration system with a neat diagram Illustrate the system with the notations used in each diagram.	CO5	3
19	Discuss in detail on Component Diagram with a suitable example.	CO5	2
20	Draw the Component, Deployment and package diagram for the Online Shopping system. Explain the system with the notations used in each diagram.	CO5	3

UNIT V

STL: Containers, sequence and Associative containers, Sequence Containers : Vector, List, Deque , Array, STL - stack -Associative Containers - Map - MultiMap - Iterator and Specialized Iterator - Functions of Iterator - Algorithms -find() -count() - sort() - search() - merge() -function object: for_each, transform - streams and Files :introduction - classes and errors- disk file handling -reading and writing

PART-A (Multiple Choice Questions)

Q. No	Questions	Course Outcome	Competence BT Level
1	**What kind of library is Standard Template Library?** a) Polymorphic b) Generic c) Both Polymorphic & Generic d) None of the mentioned Ans:b	CO6	BT1

2	**To what type of object does the container can be instantiated?** a. int b. float c. double d. any type of object Ans:d	CO6	BT1
3	**What type of class template is list?** a. Class-based b. Node-based c. Method-based d. None of the mentioned Ans:b	CO6	BT2
4	**What type of access does deque and vector provide?** a. Linear access b. Parallel access c. Random access d. None of the mentioned Ans:c	CO6	BT2
5	**Where does the vector add the item?** a. End b. Insert c. Middle d. None of the mentioned Ans:a	CO6	BT1
6	**Which are not full container classes in C++?** a. Sequence container b. Associative container c. Container adaptor d. None of the mentioned Ans:c	CO6	BT1
7	**What is the lifetime of the element in container?** a. Whole program b. Outside the block c. Everywhere d. Only on that container Ans:d	CO6	BT1
8	**Which operator is used to insert the data into file?** a. >> b. << c. < d. None of the Above Ans: b	CO6	BT1

9	**Which function is used to position back from the end of file object?** a. seekg b. seekp c. both seekg&seekp d. None of the Above Ans:a	CO6	BT1
10	**How many objects are used for input and output to a string?** a. 1 b. 2 c. 3 d. 4 Ans:c	CO6	BT2
11	**Which is used to handle the exceptions in c++?** a. catch handler b. handler c. exception handler d. None of the Mentioned Ans:c	CO6	BT1
12	**Which type of program is recommended to include in try block?** a. static memory allocation b. dynamic memory allocation c. const reference d. pointer Ans:b	CO6	BT1
13	**Which statement is used to catch all types of exceptions?** a. catch() b. catch(Test t) c. catch(…) d. None of the Above Ans:c	CO6	BT1

14	**What do Associate containers implement?** a. Arrays b. Associative arrays c. Functional Arrays d. Static arrays Ans: b	CO6	BT1
15	**By using which of the following the elements in the associate container can be efficiently accessed?** a. Key b. Position c. Both Key & Position d. Value Ans: a	CO6	BT3
16	**How many items are presented in the associate container?** a. 2 b. 3 c. 4 d. 5 Ans: c	CO6	BT1
17	**What are the containers?** a. Containers store objects and data b. Containers stores all the algorithms c. Containers contain overloaded functions d. Containers contain set of Iterators Ans: a	CO6	BT1
18	**In how many categories, containers are divided?** a. 1 b. 2 c. 3 **d. 4**	CO6	BT2

19	**What are the Sequence Containers?** a. Containers that implements data structures which can be accessed sequentially b. Containers that implements sorted data structures for fast search in O(logn) c. Containers that implements unsorted(hashed) data structures for quick search in O(1) d. Containers that implements data structures which can be accessed non-sequentially Ans:a	CO6	BT2
20	**How many Sequence Containers are provided by C++?** a. 2 b. 3 c. 4 d. 5 Ans:d	CO6	BT1
21	**What is the Standard Template Library?** a) Set of C++ template classes to provide common programming data structures and functions b) Set of C++ classes c) Set of Template functions used for easy data structures implementation d) Set of Template data structures only Ans:a	CO6	BT1
22	**What are Unordered Associative Containers?** a) Containers that implements data structures which can be accessed sequentially b) Containers that implements sorted data structures for fast search in O(logn) c) Containers that implements unsorted(hashed) data structures for quick search in O(1) d) Containers that implements data structures which can be accessed non-sequentially Ans:c	CO6	BT1
23	**What are Iterators?** a) Iterators are used to iterate over C-like arrays b) Iterators are used to iterate over pointers c) Iterators are used to point memory addresses of STL containers d) Iterators are used to iterate over functions **Ans:** C	CO6	BT1

24	**Which header file is used for Iterators?** a) <iterator> b) <algorithm> c) <iter> d) <loopIter> **Ans:**a	CO6	BT1
25	Consider that the variable str is of type std:string. What is the correct way to get the C-style string from str? **A.** Cast str to const char* as in((const char*)&str) **B.** Use str.get_c_style_string() **C.** Use str.c_str() **D.** Use str.data() Ans:C	CO6	BT2
PART B (4 Marks)			
1	What are containers in C++ STL?	CO6	BT1
2	What are the 3 entities of STL in C++?	CO6	BT1
3	What is true about his statement in C++? std::vector<int> vecInts(5);	CO6	BT2
4	Justify your answers Is it possible to initialize any Vector with an Array in C++?	CO6	BT1
5	Difference between Vector Vs List	CO6	BT2
6	Different Ways to Initialize a List and elaborate them	CO6	BT2
7	How to erase elements from List using Iterators	CO6	BT1
8	How to Remove Elements from a List while Iterating	CO6	BT1
PART C (12 Marks)			
1	Give syntax of and explain various functions related to ifstream and ofstream classes: seekp(), getline(),hide(),tail().	CO6	BT3
2	Explain the use of ifstream and ofstream classes for file input and output.	CO6	BT3
3	Explain the file operation functions in C++ to manipulate the position of file pointers in a random access file.	CO6	BT3
4	What is the purpose of push_back(), push_front(), pop_back() and pop_front() functions of a list.	CO6	BT2

5	What does this function do?
	
	void func() {
	
	std::vector<std::string> vecOfString(5, "Hi");
	for (std::string str : vecOfStr)
	std::cout << str << std::endl;
	}
		CO6	BT2

Note:

1. **BT Level –** Blooms Taxonomy Level
2. **CO – Course Outcomes**

BT1 –Remember BT2 – Understand BT3 – Apply BT4 – Analyze BT5 – Evaluate BT6 – Create