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

Third Semester

21ECC215J - OBJECT ORIENTED DESIGN AND PROGRAMMING

(For the candidates admitted during the academic year 2022-2023 onwards)

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 = 20 Marks) — Marks | BL | CO

Answer **all** Questions

1. What will be the output of the following program? — 1 | 4 | 1

```
class course
{
  int x, y;
  public:
  course(int xx)
  {
     x = ++xx;
  }
  void Display()
  {
     cout<< --x << " ";
  }
};
int main()
{
  course obj(20);
  obj.Display();
  int *p = (int*) &obj ;
  *p = 5;
  obj.Display();
  return 0;
}
```

(A) 21 4 (B) 20 5
(C) 20 4 (D) 21 5

2. Identify how can we make a class abstract? — 1 | 2 | 1

(A) By declaring it abstract using the static keyword
(B) By declaring it abstract using the virtual keyword.
(C) By making at least one member function as pure virtual function
(D) By making all member functions constant

3. What does the following statement mean? — 1 | 1 | 1

int (*fp)(char*)

(A) function taking a char* argument and returning a pointer to int
(B) pointer to a pointer
(C) pointer to an array of chars
(D) pointer to function taking a char* argument and returns an int

4. The data members and functions of a class in C++ are by default _____ — 1 | 1 | 1

(A) protected
(B) private
(C) public
(D) public & protected

5.	The friend functions and the member functions of a friend class can directly access the _____ data. (A) Private and Protected (B) Private and Public (C) Protected and public (D) Private, Protected and Public	1	1	2
6.	If the derived class is struct, then default visibility made is _____ (A) public (B) private (C) protected (D) struct cannot inherit class	1	1	2
7.	If a derived class object is created, which constructor is called first? (A) Derived class constructor (B) Depends on how we call the object. (C) Base class constructor (D) Base class Destructor	1	2	2
8.	The element included in state chart diagram are (A) Life line Makers. (B) Condition Makers. (C) Iteration Makers. (D) Transitions.	1	1	2
9.	Which among the following is correct for multiple inheritance? (A) class student {int marks;}; class stream { }; class topper: public student { }; (B) class student{ int marks;}; class stream:public student { }; (C) class student{public: int marks;}s; class stream{int total;}; class topper:public student, public stream{ }; (D) class student{ }; class stream{ }; class topper{ };	1	2	3
10.	Which type of inheritance leads to diamond problem? (A) Single level (B) Multiple (C) Multi-level (D) Hierarchical	1	1	3
11.	Virtual functions are mainly used to achieve _____ (A) Compile time polymorphism (B) Interpreter polymorphism (C) Runtime polymorphism (D) Functions code polymorphism	1	2	3
12.	Where the virtual function should be defined? (A) Twice in base class (B) Derived class (C) Base class and derived class (D) Base class	1	1	3
13.	A class is made abstract by declaring at least one of its functions as ? (A) impure virtual function (B) pure virtual function (C) pure abstract function (D) impure abstract function	1	2	4
14.	How many basic types of inheritance are provided as OOP feature? (A) 4 (B) 3 (C) 2 (D) 1	1	2	4
15.	What is meant by Template specialization? (A) It will have certain data types to be fixed (B) It will make certain data types to be dynamic. (C) Certain data types are invalid (D) Error Value	1	1	4
16.	Which among the following are not the valid notations for package and component diagram? (A) Notes (B) Box (C) Extension Mechanisms (D) Packages	1	1	4
17.	By default, what a program does when it detects an exception? (A) Continue running (B) Results in the termination of the program (C) Calls other functions of the program (D) Removes the exception and tells the programmer about an exception	1	1	5

18.	How Exception handling is implemented in the C++ program? (A) Using Exception keyword (B) Using Exception block (C) Using Error handling schedules (D) Using try-catch block	1	2	5
19.	Which container can have the same keys? (A) map (B) multimap (C) unordered map (D) set	1	2	5
20.	Which part of the try-catch block is always fully executed? (A) catch part (B) try part (C) finally part (D) throw part	1	3	5

PART - B (5 × 8 = 40 Marks)

Answer **all** Questions

		Marks	BL	CO
21.	(a) Assign and print the roll number, phone number and address of two students having names "Sam" and "John" respectively by creating two objects of the class 'Student'.	8	4	1
	(OR)			
	(b) Compare the procedural and object-oriented programming.Brief about the features of object-oriented programming.			
22.	(a) Brief about the Rules to be followed for UML sequence diagram .Draw the UML sequence diagram for online shopping.	8	2	2
	(OR)			
	(b) Write a C++ program to add two complex number using operators overloading.			
23.	(a) Discuss the role of access specifiers in inheritance and show their visibility when they are inherited as public, private and protected.	8	3	3
	(OR)			
	(b) write a c++ program to calculate the area of the square and circle using abstract class and pure virtual function.			
24.	(a) write a C++ program to add two numbers using function template.	8	2	4
	(OR)			
	(b) When do we need multiple catch blocks for a single try block? Give an example.			
25.	(a) With the use of STL Algorithms in C++,write a program to demonstrate working of sort ( ) and reverse ( )	8	3	5
	(OR)			
	(b) Use Disk file handling for Reading and printing a sequential file in C++			

PART - C (1 × 15 = 15 Marks)

Answer **any 1** Questions

		Marks	BL	CO
26.	Develop a class polynomial whose internal representation is a term consisting of coefficient and an exponent. Develop a complete class containing proper constructor and destructor functions as well as set and get functions. Overload the additions and subtraction operator to add and subtract two polynomials and display the results. Overload the assignment operator to assign one polynomial to another using friend function.	15	4	5
27.	i. Explain the copy constructors with an example? (7 marks) ii. Explain explicit Constructors, Parametrized Constructors, and multiple Constructors with suitable example. (8 marks)	15	4	4

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