ns	Time Allowed	Objective Type	Total Marks	50

NOTE: There are **TWO MARKS** for each correct answer in the following parts and **NEGATIVE ONE for each incorrect answer,** write answers on Answer Sheet — 40, 2 each

i. Which of the following is not an access specifier
- A. Private
- B. Public
- C. Personal
- D. Protected

ii. For which of the options, following statement is true :
"The attribute can only belong to one instance"
- A. Association
- B. Aggregation
- C. Composition
- D. Inheritance
- E. Both A & B options
- F. Both B & C options
- G. Both A & C options
- H. Both C & D options
- I. A, B, & C options

iii. Association is subset of aggregation
- A. True
- B. False

iv. For which of the options, following statement is true :
"The attribute is part of the instance"
- A. Association
- B. Aggregation
- C. Composition
- D. Inheritance
- E. Both A & B options
- F. Both B & C options
- G. Both A & C options
- H. Both C & D options
- I. A, B, & C options

v. For which of the options, following statement is true :
"The part (member) does not know about the existence of the object (class)"
- A. Association
- B. Aggregation
- C. Composition
- D. Inheritance
- E. Both A & B options
- F. Both B & C options
- G. Both A & C options
- H. Both C & D options
- I. A, B, & C options

vi. Why we use a Singleton?
- A. To restrict data usage
- B. To restrict data duplication
- C. To restrict access
- D. To restrict development

vii. For which of the options, following statement is true :
"The part (member) has its existence managed by the object (class)"
A. Association
B. Aggregation
C. Composition
D. Inheritance
E. Both A & B options
F. Both B & C options
G. Both A & C options
H. Both C & D options
I. A, B, & C options

viii. For which of the options, following statement is true :
"The object (member) does not have its existence managed by the object (class)"
A. Association
B. Aggregation
C. Composition
D. Inheritance
E. Both A & B options
F. Both B & C options
G. Both A & C options
H. Both C & D options
I. A, B, & C options

ix. Stream in and out operator overloading can be done by two approaches (Member function & Non Member Function)
A. True
B. False •

x. For which of the options, following statement is true :
"The object (member) can belong to more than one object (class) at a time"
A. Association
B. Aggregation
C. Composition
D. Inheritance
E. Both A & B options •
F. Both B & C options
G. Both A & C options
H. Both C & D options
I. A, B, & C options

xi. For which of the options, following statement is true :
"The member may or may not know about the existence of the object (class)"
A. Association •
B. Aggregation
C. Composition
D. Inheritance
E. Both A & B options
F. Both B & C options
G. Both A & C options
H. Both C & D options
I. A, B, & C options

xii. What is true about class? It cannot have
A. Multiple constructor
B. Multiple Parameterised constructor
C. Multiple destructor •
D. Multiple Inheritance
E. Multilevel Inheritance

a" relation is referred to
A. Association
B. Aggregation
C. Composition
D. Inheritance •

elationships are always between objects
A. True
B. False •

Which of the following is function overloading?
A. When same function with same name and parameters is re-written in a child class
B. When a function prototype is given in a class while the implementation is done in cpp
C. When a function is written with same name but different parameters •
D. When a function is written as a member function

i. Which of the following is not a characteristic of Object Oriented Programming ?
A. Data abstraction
B. Data mining •
C. Data encapsulation
D. Polymorphism

vii. Hollow Diamond symbol in UML represents what ?
A. Association
B. Aggregation
C. Composition
D. Inheritance •

xviii. Static variables are the ones that are in global scope ?
A. True •
B. False

xix.What we do to resolve diamond problem ?
A. Virtual Function
B. Virtual Composition
C. Virtual Inheritance •
D. Virtual Aggregation

xx. Structs have everything private by default ?
A. True
B. False •

Verify the code, identify if any issue(s) and write output of the following code with no compiler optimisation on Objective Answer Sheet. 1(

```
1.  #include <iostream>
2.  using namespace std;
3.  class OOP {
4.      char grade;
5.  public:
6.      OOP() {
7.          grade = 'F';
8.          cout << "OOP Non Parameterised Constructor:
    "<<grade << endl;
9.      }
```

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```
10.     OOP(char g) {
11.         grade = g;
12.         cout << "OOP Parameterised Constructor: " <<
    grade<<endl;
13.     }
14.
15.     OOP(const OOP& other) {
16.         cout << "OOP Copy Constructor: "<<other.grade <<
    endl;
17.         grade = other.grade;
18.     }
19.
20.     OOP& operator = (const OOP& other) {
21.         cout << "OOP Assignment Operator" << endl;
22.         grade = other.grade;
23.         return *this;
24.     }
25.
26.     OOP compare(OOP other )
27.     {
28.         cout << "My Grade " << grade<<endl;
29.         cout << "Other Grade " << other.grade<<endl;
30.         OOP local(grade<other.grade?grade:other.grade);
31.         return local;
32.     }
33.
34.     ~OOP() {
35.         cout << "OOP destroyed: " << grade<<endl;
36.     }
37. };
38.
39.
40. int main() {
41.     OOP base23A('A');
42.     OOP base23B('B');
43.     OOP reference;
44.     OOP student = base23A.compare(base23B);
45.     reference= student;
46.
47.     return 0;
48. }
```

OOP Parameterised Constr .. : g
OOP Para . . . . : g
OOP Non-Para . . . : F
OOP Non-Para.
OOP Assign Operator.

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Time Allowed	Subjective Type	Total Marks	50
You have been asked to design a class named Array, through templates. Purpose of this class would be to keep multiple objects through dynamic memory allocation of same data type together. (Maintain capacity and occupied variables for an array) a) What decisions will you make in your code that Array class will be shallow copied or deep copied? Give code example. b) Which of the characteristics of Object Oriented Programming will be used in this class and which won't be used? Explain why? c) If I have a Student Class, what would be impact of using Student * as template type vs Student . d) Differentiate between Class and Object with small example with Array Class e) List possible access specifiers and their restrictions, identify which and why you have used in Array Class		25 5 each	
In continuation to question 1, write answer for following part considering separate .h and .cpp files. So your answer should have prototype separate to definition of the functions below. • A parameterised constructor (with parameter of the size of an array) and a Destructor • Stream in operator (Based on size it will take input of all data elements from user) • Stream out operator (display all elements) • Operator + (As member function, it will combine the element wise data in an array of only arrays of same sizes) • Operator - (As non member function, it will subtract element wise data in an array, only of same sizes)		25 5 each	