

# K K CENTRE MPP

## FINAL TERM EXAMINATION CS201- Introduction to Programming

Question No: 1 ( Marks: 1 ) - Please choose one

---

Pointer is a variable which store,

- ▶ Data
- ▶ Memory Address
- ▶ Data Type
- ▶ Values

Question No: 2 ( Marks: 1 ) - Please choose one

---

All preprocessor directives are started with the symbol \_\_\_\_\_.

- ▶ \*
- ▶ +
- ▶ @
- ▶ #

Question No: 3 ( Marks: 1 ) - Please choose one

---

Within the statement `obj1=obj2;` `obj1` will call the assignment operator function and `obj2` will be passed as an argument to function.

- ▶ True
- ▶ False

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Question No: 4 ( Marks: 1 ) - Please choose one

---

What is the sequence of event(s) when deallocating memory using delete operator?

- ▶ Only block of memory is deallocated for objects
- ▶ Only destructor is called for objects
- ▶ Memory is deallocated first before calling destructor
- ▶ Destructor is called first before deallocating memory

Question No: 5 ( Marks: 1 ) - Please choose one

---

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators.

- ▶ True
- ▶ False

Question No: 6 ( Marks: 1 ) - Please choose one

---

To include code from the library in the program, such as iostream, a directive would be called up using this command.

- ▶ #include "iostream.h"
- ▶ include <iostream.h>
- ▶ include <iostream.h>
- ▶ #include <iostream.h>

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Question No: 7 ( Marks: 1 ) - Please choose one

---

The number 544.53 must be stored in \_\_\_\_\_ data type.

- ▶ int
- ▶ short
- ▶ float
- ▶ char

Question No: 8 ( Marks: 1 ) - Please choose one

---

A template function can have different type of arguments.

- ▶ True
- ▶ False

Question No: 9 ( Marks: 1 ) - Please choose one

---

For which values of the integer `value` will the following code becomes an infinite loop?

```
int number=1;
while (true) {
cout << number;
if (number == 3) break;
number += integer_value; }
```

- ▶ any number other than 1 or 2
- ▶ Only 0

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▶ only 1

▶ only 2

Question No: 10 (Marks: 1) - Please choose one

---

Template class cannot have static variables.

▶ True

▶ False

Question No: 11 (Marks: 1) - Please choose one

---

Which of the following is used with bit manipulation?

▶ Signed integer

▶ Un-signed integer

▶ Signed double

▶ Un-signed double

Question No: 12 (Marks: 1) - Please choose one

---

Structure is a collection of \_\_\_\_\_ under a single name.

▶ Only Functions

▶ Only Variables

▶ Both Functions and Variables

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▶ None of the given options

Question No: 13 ( Marks: 1 ) - Please choose one

---

Which of the following is the correct C++ syntax to allocate space dynamically for an array of 10 int?

▶ `new int(10) ;`

▶ `new int[10] ;`

▶ `int new(10) ;`

▶ `int new[10];`

Question No: 14 ( Marks: 1 ) - Please choose one

---

Unary operator implemented as member function takes \_\_\_\_\_ arguments whereas non-member function takes \_\_\_\_\_ arguments.

▶ `One, zero`

▶ `Zero, one`

▶ `One, two`

▶ `Two, one`

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Question No: 15 ( Marks: 1 ) - Please choose one

---

The first parameter of overloaded stream insertion operator is \_\_\_\_\_ where second parameter is \_\_\_\_\_

- ▶ input stream, object of class
- ▶ object of class, output stream
- ▶ output stream, object of class
- ▶ object of class, input stream

Question No: 16 ( Marks: 1 ) - Please choose one

---

We can also do conditional compilation with preprocessor directives.

- ▶ True
- ▶ False

Question No: 17 ( Marks: 1 ) - Please choose one

---

If a symbolic constant has been defined, it will be an error to define it again.

- ▶ True
- ▶ False

Question No: 18 ( Marks: 1 ) - Please choose one

---

While calling function, the arguments are assigned to the parameters from \_\_\_\_\_.

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- ▶ left to right.
- ▶ right to left
- ▶ no specific order is followed
- ▶ none of the given options.

Question No: 19 ( Marks: 1 ) - Please choose one

---

Classes defined inside other classes are called \_\_\_\_\_ classes

- ▶ looped
- ▶ nested
- ▶ overloaded
- ▶ none of the given options.

Question No: 20 ( Marks: 1 ) - Please choose one

---

If we define an identifier with the statement `#define PI 3.1415926` then during the execution of the program the value of PI \_\_\_\_\_.

- ▶ cannot be replaced
- ▶ None of the given options
- ▶ Remain constant.
- ▶ can be changed by some operation

Question No: 21 ( Marks: 1 ) - Please choose one

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---

Assignment operator is -----associative.

- ▶ right
- ▶ left
- ▶ binary
- ▶ unary

Question No: 22 ( Marks: 1 ) - Please choose one

---

If text is a pointer of class String then what is meant by the following statement?  
text = new String [5];

- ▶ Creates an array of 5 string objects statically
- ▶ Creates an array of 5 string objects dynamically
- ▶ Creates an array of pointers to string
- ▶ Creates a string Object

Question No: 23 ( Marks: 1 ) - Please choose one

---

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The return type of the operator function for << operator is \_\_\_\_\_.

- ▶ class for which we overload operator
- ▶ reference of ostream class (ostream&)
- ▶ reference of istream class (istream&)
- ▶ void

Question No: 24 ( Marks: 1 ) - Please choose one

---

The code is written to \_\_\_\_\_ the program.

- ▶ implement
- ▶ design
- ▶ analysis
- ▶ none of the given options.

Question No: 25 ( Marks: 1 ) - Please choose one

---

Memory allocated at run time is a system resource and it is the responsibility of \_\_\_\_\_ to de-allocate the memory.

- ▶ System
- ▶ Programmer

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- ▶ User of program
- ▶ None of given options

Question No: 26 ( Marks: 1 ) - Please choose one

---

Templates are not type safe.

- ▶ true
- ▶ false

Question No: 27 ( Marks: 2 )

---

Give the general syntax of class template.

Answer:

Syntax of class template:

```
template <class T>
class class-name()
{
definition of class
};
```

Question No: 28 ( Marks: 2 )

---

What is difference between endl and \n?

Answer:

The difference between endl and \n is that endl is use to start a new line for the next row  
And \n is a new line character.

Question No: 29 ( Marks: 2 )

---

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What is the this pointer? Give an example of its use.

Answer:

This pointer is use to points to the current object in programming.

Question No: 30 ( Marks: 2 )

---

Identify each of the following as function call, function definition and function declaration.

`int func(int num1, int num2);`

Function call:

Function ; Function definition: Integer; Function declaration: Num1 and Num2

`int func(int, int);`

Function call:

Function ; Function definition: Integer; Function declaration: integers

`func(5, 6) ;`

Function call:

Function ; Function definition: numbers; Function declaration: 5&6

`int func(int num1, int num2){}`

Function call:

Function ; Function definition: Integer; Function declaration: Num1 and Num2 from user

Question No: 31 ( Marks: 3 )

---

Consider the following code segment. What will be the output of the following code segment?

```
class class1 {
public:
class class2 {
public:
class2() {
cout << "Calling default constructor of class2\n" ;
}
};
class1() {
```

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```
cout << "Calling default constructor of class1\n" ;  
}  
};  
main(){  
class1::class2 obj1;  
class1 obj2 ;  
}
```

Question No: 32 ( Marks: 3 )

---

Is it possible to define two functions as given below? Justify your answer.

```
func(int x, int y)  
func(int &x, int &y)
```

Answer:

No, we cannot define two functions as `func(intx, inty)` `func(int &x, int&y)` because it's give an error function not initializing.

Question No: 33 ( Marks: 3 )

---

What happens when we use new and delete operator?

Answer:

When we use *new* operator to create objects the memory space is allocated for the object and then its constructor is called. Similarly, when we use *delete* operator with our objects, the destructor is called for the object before deallocating the storage to the object.

Question No: 34 ( Marks: 5 )

---

What is the difference between function overloading and operator overloading?

Answer:

Difference b/w function overloading and operator overloading is:

In function overloading, the functions have the same name but differ either by the number of arguments or the type of the arguments.

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Operator overloading is to allow the same operator to be bound to more than one implementation, depending on the types of the operands.

Question No: 35 ( Marks: 5 )

---

Why the first parameter of operator function for << operator must be passed by reference?

Answer:

Operator<<'s first parameter must be an ostream passed by reference. Its second parameter, the IntList that is printed, does not have to be passed as a const-reference parameter; however it is more efficient to pass it by reference than by value (since that avoids a call to the copy constructor), and it should not be modified by operator<<, so it should be a const reference parameter

Question No: 36 ( Marks: 5 )

---

Read the given below code and explain what task is being performed by this function

```
Matrix :: Matrix ( int row , int col )
{
numRows = row ;
numCols = col ;
elements = new ( double * ) [ numRows ] ;
for ( int i = 0 ; i < numRows ; i ++ )
{
elements [ i ] = new double [ numCols ] ;
for ( int j = 0 ; j < numCols ; j ++ )
elements [ i ] [ j ] = 0.0 ;
}
}
```

Hint : This function belong to a matrix class, having

Number of Rows = numRows

Number of Columns = numCols

Answer:

In this code the matrix function is defined, it get the number of rows from the user and create the row of matrix and then get the columns from the user and create the columns. The New is showing for creating more array space for the data which user enters. The elements [i][j] will print the data in matrix form.

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## FINAL TERM EXAMINATION

### CS201- Introduction to Programming

Time: 90 min

Marks: 58

Question No: 1 (Marks: 1) - Please choose one

&& is ----- operator.

- ▶ An arithmetic
- ▶ **Logical**
- ▶ Relational
- ▶ Unary

Question No: 2 (Marks: 1) - Please choose one

Which of the following function(s) is/are included in ctype.h header file?

- ▶ isdigit(int c)
- ▶ isxdigit(int c)
- ▶ tolower(int c)
- ▶ **All of the above**

Question No: 3 (Marks: 1) - Please choose one

Disks are \_\_\_\_\_ devices having access time of \_\_\_\_\_ milliseconds.

- ▶ Electro-physical, 6
- ▶ Electro-Mechanical, 4
- ▶ Electro-physical, 5
- ▶ **Electro-Mechanical, 7**

Question No: 4 (Marks: 1) - Please choose one

All preprocessor directives are started with the symbol \_\_\_\_\_.

- ▶ \*
- ▶ ++
- ▶ @
- ▶ **#**

Question No: 5 (Marks: 1) - Please choose one

When we use manipulators in our program then which header file should be included?

- ▶ iostream.h
- ▶ stdlib.h
- ▶ stdio.h
- ▶ **iomanip.h**

Question No: 6 (Marks: 1) - Please choose one

setprecision is a parameter less manipulator.

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▶ True

▶ **False**

Question No: 7 ( Marks: 1 ) - Please choose one

Which of the following is NOT a preprocessor directive?

▶ #error

▶ #define

▶ #line

▶ **#undef**

Question No: 8 ( Marks: 1 ) - Please choose one

We can do arithmetic with references like pointers.

▶ True

▶ **False**

Question No: 9 ( Marks: 1 ) - Please choose one

What does (\*this) represents?

▶ The current function of the class

▶ The current pointer of the class

▶ **The current object of the class**

▶ A value of the data member

Question No: 10 ( Marks: 1 ) - Please choose one

Friend function of a class is \_\_\_\_\_ .

▶ Member function

▶ **Non-member function**

▶ Private function

▶ Public function

Question No: 11 ( Marks: 1 ) - Please choose one

A function can declare itself a friend of a class.

▶ True

▶ **False**

Question No: 12 ( Marks: 1 ) - Please choose one

Overloaded delete operator function takes the same parameter as an argument returned by new operator function.

▶ **True**

▶ False

Question No: 13 ( Marks: 1 ) - Please choose one

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators.

▶ **True**

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► False

Question No: 14 ( Marks: 1 ) - Please choose one

A template function must have at least ----- generic data type

- Zero
- **One**
- Two
- Three

Question No: 15 ( Marks: 1 ) - Please choose one

A template function must have only generic data types.

- True
- **False**

Question No: 16 ( Marks: 1 ) - Please choose one

We can not make a member function of a class as template function.

- True
- **False**

Question No: 17 ( Marks: 1 ) - Please choose one

Which character is inserted at the end of string to indicate the end of string?

- new line
- tab
- **null**
- carriage return

Question No: 18 ( Marks: 1 ) - Please choose one

Assignment operator is used for \_\_\_\_\_.

- calculation
- reading
- **assigning value to variables**
- None of the given options.

Question No: 19 ( Marks: 1 ) - Please choose one vuzs

The object \_\_\_\_\_ may be used both for file input and file output

- **fstream,**
- ifstream,
- ofstream,
- none of the given options.

Question No: 20 ( Marks: 1 ) - Please choose one

Which of the following function calling mechanism is true for the function prototype given below?

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float func(float &);

- ▶ Call by value
- ▶ Call by reference using pointer
- ▶ *Call by reference using reference variable*
- ▶ None of the given options

Question No: 21 (Marks: 1) - Please choose one

The programs, in which we allocate static memory, run essentially on \_\_\_\_\_

- ▶ Heap
- ▶ System Cache
- ▶ None of the given options
- ▶ *Stack*

Question No: 22 (Marks: 1) - Please choose one

Overloaded delete operator function takes parameter of void pointer and returns \_\_\_\_\_.

- ▶ *void*
- ▶ void pointer
- ▶ pointer to an object
- ▶ pointer of type int

Question No: 23 (Marks: 1) - Please choose one

What should be the return type of the constructor?

- ▶ void pointer
- ▶ int
- ▶ same as object type
- ▶ *constructors do not return any thing*

Question No: 24 (Marks: 1) - Please choose one

It is a way of reusing the code when we contain objects of our already written classes into a new class,

- ▶ *True*
- ▶ False

Question No: 25 (Marks: 1) - Please choose one vuzs

Templates are not type safe.

- ▶ true
- ▶ *false*

Question No: 26 (Marks: 1) - Please choose one

The functions used for dynamic memory allocation return pointer of type \_\_\_\_\_

- ▶ int

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- ▶ float
- ▶ **void**
- ▶ double

Question No: 27 ( Marks: 2 )

Write a declaration statement for an array of 10 elements of type float. Include an initialization statement of the first four elements to 1.0, 2.0, 3.0 and 4.0.

Answer:

```
float floatArray[10] = {1.0,2.0,3.0,4.0};
```

Question No: 28 ( Marks: 2 )

Write the general syntax for the declaration of pre-increment and post-increment member operator function.

Classname operator ++(); ---- pre increment

Classname operator ++(int) ---- post increment

Question No: 29 ( Marks: 2 )

What is difference between endl and \n?

Question No: 30 ( Marks: 2 )

What does code optimization mean?

Question No: 31 ( Marks: 3 )

How is the following cout statement interpreted by compiler?szuy

```
cout << a << b << c ;
```

Question No: 32 ( Marks: 3 )

Suppose an object of class A is declared as data member of class B.

(i) The constructor of which class will be called first? Answer : A

(ii) The destructor of which class will be called first? Answer : B

Question No: 33 ( Marks: 3 )

Define static variable. Also explain life time of static variable?

Question No: 34 ( Marks: 5 )

What is difference between Unary and binary operators and how they can be overloaded?

Question No: 35 ( Marks: 5 )

What steps we must follow to design good program?

Question No: 36 ( Marks: 5 )

Write a program which defines five variables which store the salaries of five employees, using setw and setfill manipulators to display all these salaries in a column.

Note: Display all data with in a particular width and the empty space should be filled with character x

Output should be displayed as given below:

```
xxxxxx1000
```

```
xxxxxx1500
```

```
xxxxxx20000
```

```
xxxxxx30000
```

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xxxxxx60000

## FINAL TERM EXAMINATION

CS201- Introduction to Programming (Session - 1)

Question No: 1 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ To access the data members of structure \_\_\_\_\_ is used.

▶ dot operator (.)

▶ \* operator

▶ à operator

▶ None of given.

Question No: 2 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ What does  $5 \wedge 6$  , evaluate to in decimal where '^' is Exclusive OR operator?

▶ 1

▶ 2

▶ 3

▶ 4

Question No: 3 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ If constructor contains a return statement in its body then compiler will give \_\_\_\_\_

▶ No error

▶ Syntax error

▶ Logical error

▶ Run time error

Question No: 4 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ We can use New keyword inside of Class Constructor.

▶ True

▶ False

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Question No: 5 ( Marks: 1 ) - Please choose one

When an operator function is define as member function for a Unary operator then the number of argument it take is/are,

- ▶ Zero
- ▶ One
- ▶ Two
- ▶ N arguments

Question No: 6 ( Marks: 1 ) - Please choose one

The declarator of Plus (+) member operator function is

- ▶ Class-Name operator + (Class-Name rhs)
- ▶ operator Class-Name + ( )
- ▶ operator Class-Name + ( rhs)
- ▶ Class-Name operator + ( )

Question No: 7 ( Marks: 1 ) - Please choose one

Friend function of a class is

- ▶ Member function
- ▶ Non-member function
- ▶ Private function
- ▶ Public function

Question No: 8 ( Marks: 1 ) - Please choose one

We can also create an array of user define data type.

- ▶ True

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► False

Question No: 9 ( Marks: 1 ) - Please choose one

What is the sequence of event(s) when deallocating memory using delete operator?

- Only block of memory is deallocated for objects
- Only destructor is called for objects
- Memory is deallocated first before calling destructor
- Destructor is called first before deallocating memory

Question No: 10 ( Marks: 1 ) - Please choose one

Deleting an array of objects without specifying [] brackets may lead to memory leak

- True
- False

Question No: 11 ( Marks: 1 ) - Please choose one

Which of the following data type(s) can operate on modulus operator '%'?

- float, int
- float, double
- int
- char

Question No: 12 ( Marks: 1 ) - Please choose one

Array is passed by value to a function by default.

- True
- False

Question No: 13 ( Marks: 1 ) - Please choose one

With template function, the compiler automatically detects the passed data and generates a new copy of function using passed data.

- True
- False

Question No: 14 ( Marks: 1 ) - Please choose one

What will be the correct syntax to initialize all elements of two-dimensional array to value 0?

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- ▶ `int arr[2][3] = {0,0} ;`
- ▶ `int arr[2][3] = {{0},{0}} ;`
- ▶ `int arr[2][3] = {0},{0} ;`
- ▶ `int arr[2][3] = {0} ;`

Question No: 15 ( Marks: 1 ) - Please choose one

When an operator function is define as member function then operand on the left side of operator must be an object.

- ▶ True
- ▶ False

Question No: 16 ( Marks: 1 ) - Please choose one

break statement can be used outside a loop or switch statement.

- ▶ True
- ▶ False

Question No: 17 ( Marks: 1 ) - Please choose one

The keyword \_\_\_\_\_ is used to return some value from a function.

- ▶ `return`
- ▶ `break`
- ▶ `continue`
- ▶ `goto`

Question No: 18 ( Marks: 1 ) - Please choose one

Every data member or function inside the structure is \_\_\_\_\_ by default whereas everything declared inside a class is \_\_\_\_\_ by default.

- ▶ `private, public`
- ▶ `public, private`
- ▶ `private, protected`
- ▶ `public, protected`

Question No: 19 ( Marks: 1 ) - Please choose one

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Which of the following is true for the C++ statement given below?  
`int &ref = val ;`

- ▶ It creates a synonym for variable 'val'
- ▶ It creates an alias for variable 'val'
- ▶ It's a new name for variable 'val'
- ▶ All of the given options

Question No: 20 ( Marks: 1 ) - Please choose one

If overloaded plus operator is implemented as non-member function then which of the following statement will be true for the statement given below?  
`obj3 = obj1 + obj2 ;`

- ▶ obj2 will be passed as an argument to + operator whereas obj1 will drive the + operator
- ▶ obj1 will drive the + operator whereas obj2 will be passed as an argument to + operator
- ▶ Both objects (obj1, obj2) will be passed as arguments to the + operator
- ▶ Any of the objects (obj1, obj2) can drive the + operator

Question No: 21 ( Marks: 1 ) - Please choose one

Unary operator implemented as member function takes \_\_\_\_ arguments whereas non-member function takes \_\_\_\_ arguments.

- ▶ One, zero
- ▶ Zero, one
- ▶ One, two
- ▶ Two, one

Question No: 22 ( Marks: 1 ) - Please choose one

The input/output streams `cin` and `cout` are \_\_\_\_\_ therefore have \_\_\_\_\_.

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- ▶ Structures, function
- ▶ Objects, member functions
- ▶ Functions, objects
- ▶ None of the given options

Question No: 23 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ If a symbolic constant has been defined, it will be an error to define it again.

- ▶ True
- ▶ False

Question No: 24 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ Every class contains \_\_\_\_\_.

- ▶ Constructor
- ▶ Destructor
- ▶ Both a constructor and a destructor
- ▶ None of the given options

Question No: 25 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ new and delete keywords are \_\_\_\_\_ in C++ language.

- ▶ Built-in- Function
- ▶ Operators
- ▶ Memory Allocation Function
- ▶ None of the given options

Question No: 26 ( Marks: 1 ) - Please choose one

\_\_\_\_\_ Consider the following code segment.

```
class M {  
public:
```

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M &operator+(const M &);

...  
};

p + q //code of line implies that p.operator+(q)

Let assume if p and q are class objects then function is implemented as \_\_\_\_\_

- ▶ Member function
- ▶ Non-member function
- ▶ Friend function
- ▶ None of the given options

Question No: 27 ( Marks: 1 ) - Please choose one

-----associative. Assignment operator is -----

- ▶ right
- ▶ left
- ▶ binary
- ▶ unary

Question No: 28 ( Marks: 1 ) - Please choose one

Static variable which is defined in a function is initialized \_\_\_\_\_.

- ▶ Only once during its life time
- ▶ Every time the function call
- ▶ Compile time of the program
- ▶ None of the above

Question No: 29 ( Marks: 1 ) - Please choose one

----- We can not define a variable of user-defined data type in the class.

- ▶ True
- ▶ False

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Question No: 30 ( Marks: 1 ) - Please choose one

A constructor that will create a new object with a full copy of the other object, is copy is known as \_\_\_\_\_

- ▶ deep copy
- ▶ shallow copy
- ▶ constructor copy
- ▶ none of the options

Question No: 31 ( Marks: 1 )

What is the use of reference data type?

A reference data type is a variable that can contain an address. The reference data types in Java are arrays, classes and interfaces. You'll hear often say that Java does not have pointers. Yet, you could consider a reference data type to be a pointer

Question No: 32 ( Marks: 1 )

What are the main types of operators in terms of number of arguments they take?

The difference is in the number of arguments used by the function. In the case of binary operator overloading, when the function is a member function then the number of arguments used by the operator member function is one (see below example). When the function defined for the binary operator overloading is a friend function, then it uses two arguments.

Question No: 33 ( Marks: 2 )

What is the this pointer? Give an example of its use

In a C++ program, if you create object A of class X, you can then obtain the address of A by using the "this" pointer. The address is available as a local variable in the non-static member functions of X, and its type is const X\*. The "this" pointer works because C++ creates instances of its data members, and it keeps one copy of each member function.

Question No: 34 ( Marks: 2 )

What are manipulators? Give one example.

Manipulators are operators used in C++ for formatting output. The data is manipulated by the programmer's choice of displayed endl manipulator. This manipulator has the same functionality as the '\n' newline character.

Question No: 35 ( Marks: 3 )

What will be the output of following functions if we call these functions three times?

```
1)
void func1(){
int x = 0;
```

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```
x++;  
cout << x << endl;  
}
```

Output will be:

1  
1  
1

```
2)  
void func2(){  
static int x = 0 ;  
x++;  
cout << x << endl ;  
}
```

Output will be:

1  
2  
3

Question No: 36 ( Marks: 3 )

\_\_\_\_\_ If the requested memory is not available in the system then what does calloc/malloc and new operator return?

malloc returns a void pointer to the allocated space or NULL if there is insufficient memory available. To return a pointer to a type other than void, use a type cast on the return value. The storage space pointed to by the return value is guaranteed to be suitably aligned for storage of any type of object. If size is 0, malloc allocates a zero-length item in the heap and returns a valid pointer to that item.

By default, malloc does not call the new handler routine on failure to allocate memory. You can override this default behavior so that, when malloc fails to allocate memory, malloc calls the new handler routine in the same way that the new operator does when it fails for the same reason.

Question No: 37 ( Marks: 3 )

\_\_\_\_\_ If we want to send the data by reference and don't want that original data should be affected then what can we do to prevent any change?

Question No: 38 ( Marks: 5 )

\_\_\_\_\_ Write down the disadvantages of the templates.

The disadvantages of templates are:

- Templates can make code difficult to read and follow depending upon coding style.

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- They can present seriously confusing syntactical problems esp. when the code is large and spread over several header and source files.
- Then, there are times, when templates can "excellently" produce nearly meaningless compiler errors thus requiring extra care to enforce syntactical and other design constraints. A common mistake is the angle bracket problem.

Question No: 39 ( Marks: 5 )

The following code segment has errors. Locate as many as you can and explain briefly.

```
class Circle // no need to enter colon here , so I removed it
{
private : //colon missing
double centerX;
double centerY;
double radius;
public: //colon missing
void setCenter(double, double);
void setRadius(int);
}; //semi colon missing
```

Question No: 40 ( Marks: 10 )

Write a program which consists of two classes, Date and Person.

Date class should contain three data members day, month, year and setter and getter function for these data members. Date class should also contain showdate() member function to display date.

Person class should contain three data members Name, Address, and Bday, where Name and Address are char pointer while Bday(Date of birth) is of type Date, Person class should further contain two member functions Display() and setdate().

In main program Create an object of Class person and call the member functions with it.

Please find the Answer in following Box

```
#include <stdio.h>
#include <iostream>
#include <cstring>
using namespace std;
```

```
class Date
{
public:
int day;
int month;
int year;
```

```
public:
```

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```
Date()
{
day=0;
month=0;
year=0;
}

void setDay(int);
void setMonth (int);
void setYear(int);

int getDay();
int getMonth();
int getYear();

void showDate();
};
void Date: :setDay(int d)
{
if{d<1 || d>31)
cout<<"Invalid month Renter it";
cin>>d;
}
day=d;
}

void Date: :setMonth (int m)
{
if(m<1 || m>12)
{
cout<<"Invalid month Renter it";
cin>>m;
}
month=m;
}

void Date: :setYear (int y)
{
year=y;
}

int Date: :getDay()
{
return day;
}

int Date: :getMonth()
{
return month;
```

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```
}
int Date: :getYear()
{
return year;
}
void Date: :showDate()
{
cout<<day<<"-"<<month<<"-"<<year<<endl;
}
Class Person
{
public:
char *Name;
char *Address
Date Bday;

public:
Student()
{
Name=new char[20];
Address=new char[10];
cin.getline(Name,20);
cout<<"Enter Address:";
cin.getline(Address,10);
}

void setDate()
{
cout<<"Enter Day:";
cin>>Ad_date.day;
cout<<"Enter month:";
cin>>Ad_date.month;
cout<<"Enter Year:";
cin>>Ad_date.year;
}

void Display()
{
cout<<"Name:"<<endl;
cout<<"Address:"<<Address<<endl;
cout<<"Date of Birth:";
Ad-date.showDate();
}
};

void main()
{
Person object;
```

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```
object.setDate();  
object.Display();  
system("pause");  
}
```

Question No: 41 ( Marks: 10 )

Write a C++ program that

contains a class 'myClass' having two data members of type int.

The class must have

A default constructor which must initialize all the data members to their meaningful values.

A destructor with no implementation.

Setter member functions to set all data members of class

Getter member functions to get all data members of class

In main function of the program

Prompt the user to enter the number of objects to be created.

Dynamically allocate memory to objects according to the size entered by user.

De-allocate memory that was allocated to objects

Find solution in following box:

```
#include <stdio.h>  
#include <iostream>  
#include <cstring>  
using namespace std;  
  
class myclass  
{  
  
public:  
int a;  
int b;  
int *iptr, *sptr;  
  
construct{int,int,int}  
  
void seta(int);
```

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```
void setb(int);
void setc(int);

int geta();
int getb();
int getc();

};

void Person: :seta(int aa)
{
a=aa;
}

void Person: :setb (int bb)
{
b=bb;
}

void Person: :setc (int cc)
{
c=cc;
}

main()
{
int num;

cout<<"Enter the number of objects to be created";

cin>>num;

for (int i =1;i==num;i++)
{
Person i_
}
}
}
```

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FINAL TERM EXAMINATION  
CS201- Introduction to Programming

Question No: 1 ( Marks: 1 ) - Please choose one

In C/C++ if we define an array of size eight (8) i.e. `int Arr [8]`; then the last element of this array will be stored at,

- ▶ Arr[0]
- ▶ Arr[8]
- ▶ Arr[7]
- ▶ Arr[-1]

Question No: 2 ( Marks: 1 ) - Please choose one

When an array is passed to a function then default way of passing this array is,

- ▶ By data
- ▶ By reference
- ▶ By value
- ▶ By data type

Question No: 3 ( Marks: 1 ) - Please choose one

Array is a data structure which store

- ▶ Memory addresses
- ▶ Variables

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► Data Type

► Data

Question No: 4 ( Marks: 1 ) - Please choose one

---

We can also create an array of user define data type.

► True

► False

Question No: 5 ( Marks: 1 ) - Please choose one

---

When we define an array of objects then,

► Destructor will call once for whole array

► Destructer will call for each object of the array

► Destructor will never call

► Depends on the size of array

Question No: 6 ( Marks: 1 ) - Please choose one

---

What is the sequence of event(s) when allocating memory using new operator?

► Only block of memory is allocated for objects

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- ▶ Only constructor is called for objects
- ▶ **Memory is allocated first before calling constructor**
- ▶ Constructor is called first before allocating memory

Question No: 7 ( Marks: 1 ) - Please choose one

---

We can delete an array of objects without specifying [] brackets if a class is not doing dynamic memory allocation internally.

- ▶ True
- ▶ **False**

Question No: 8 ( Marks: 1 ) - Please choose one

---

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators.

- ▶ **True**
- ▶ False

Question No: 9 ( Marks: 1 ) - Please choose one

---

Which of the following is correct way to initialize a variable x of int type with value 10?

- ▶ `int x ; x = 10 ;`

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- ▶ `int x = 10 ;`
- ▶ `int x, x = 10;`
- ▶ `x = 10 ;`

Question No: 10 ( Marks: 1 ) - Please choose one

---

Default mechanism of function calling in case of array is \_\_\_\_\_ and in case of variable is \_\_\_\_\_

- ▶ Call by value, call by reference
- ▶ Call by referene, call by reference
- ▶ **Call by reference, call by value**
- ▶ Call by value, call by value

Question No: 11 ( Marks: 1 ) - Please choose one

---

What does STL stand for?

- ▶ Source template library
- ▶ **Standard template library**
- ▶ Stream template library
- ▶ Standard temporary library

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Question No: 12 ( Marks: 1 ) - Please choose one

---

Skill(s) that is/are needed by programmers \_\_\_\_\_.

- ▶ Paying attention to detail
- ▶ Think about the reusability
- ▶ Think about user interface
- ▶ All of the given options

Question No: 13 ( Marks: 1 ) - Please choose one

---

For which array, the size of the array should be one more than the number of elements in an array?

- ▶ int
- ▶ double
- ▶ float
- ▶ char

Question No: 14 ( Marks: 1 ) - Please choose one

---

new and delete are \_\_\_\_\_ whereas malloc and free are \_\_\_\_\_.

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- ▶ Functions, operators
- ▶ Classes, operators
- ▶ **Operators, functions**
- ▶ Operators, classes

Question No: 15 (Marks: 1) - Please choose one

---

Friend functions are \_\_\_\_\_ of a class.

- ▶ Member functions
- ▶ Public member functions
- ▶ Private member functions
- ▶ **Non-member functions**

Question No: 16 (Marks: 1) - Please choose one

---

The prototype of friend functions must be written \_\_\_\_\_ the class and its definition must be written \_\_\_\_\_

- ▶ inside, inside the class
- ▶ inside, outside the class

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- ▶ outside, inside the class
- ▶ outside, outside the class

Question No: 17 ( Marks: 1 ) - Please choose one

---

If overloaded plus operator is implemented as non-member function then which of the following statement will be true for the statement given below?

`obj3 = obj1 + obj2 ;`

- ▶ obj2 will be passed as an argument to + operator whereas obj1 will drive the + operator
- ▶ obj1 will drive the + operator whereas obj2 will be passed as an argument to + operator
- ▶ Both objects (obj1, obj2) will be passed as arguments to the + operator
- ▶ Any of the objects (obj1, obj2) can drive the + operator

Question No: 18 ( Marks: 1 ) - Please choose one

---

Which one of the following is the declaration of overloaded pre-increment operator implemented as member function?

- ▶ `Class-name operator +() ;`
- ▶ `Class-name operator +(int) ;`
- ▶ `Class-name operator ++() ;`
- ▶ `Class-name operator ++(int) ;`

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Question No: 19 ( Marks: 1 ) - Please choose one

---

For cin, the source is normally a \_\_\_\_\_ and destination can be \_\_\_\_\_.

- ▶ File, native data type
- ▶ Disk, user-define type
- ▶ **Keyboard, variable**
- ▶ File, user-define type

Question No: 20 ( Marks: 1 ) - Please choose one

---

We can also do conditional compilation with preprocessor directives.

- ▶ **True**
- ▶ False

Question No: 21 ( Marks: 1 ) - Please choose one

---

The programs, in which we allocate static memory, run essentially on \_\_\_\_\_

- ▶ Heap
- ▶ System Cache
- ▶ None of the given options
- ▶ **Stack**

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Question No: 22 ( Marks: 1 ) - Please choose one

---

The default value of a parameter can be provided inside the \_\_\_\_\_

- ▶ function prototype
- ▶ **function definition**
- ▶ both function prototype or function definition
- ▶ none of the given options.

Question No: 23 ( Marks: 1 ) - Please choose one

---

While calling function, the arguments are assigned to the parameters from \_\_\_\_\_.

- ▶ left to right.
- ▶ right to left
- ▶ **no specific order is followed**
- ▶ none of the given options.

Question No: 24 ( Marks: 1 ) - Please choose one

---

When an operator function is defined as member function for a binary Plus (+) operator then the number of argument it take is/are.

- ▶ Zero
- ▶ One

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▶ Two

▶ N arguments

Question No: 25 ( Marks: 1 ) - Please choose one

---

With user-defined data type variables (Objects), self assignment can produce \_\_\_\_\_

▶ Syntax error

▶ Logical error

▶ Link error

▶ Non of the given options

Question No: 26 ( Marks: 1 ) - Please choose one

---

Assignment operator is used to initialize a newly declared object from existing object.

▶ True

▶ False

Question No: 27 ( Marks: 1 ) - Please choose one

---

When an object of a class is defined inside an other class then,

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- ▶ Constructor of enclosing class will be called first
- ▶ Constructor of inner object will be called first
- ▶ Constructor and Destructor will be called simultaneously
- ▶ None of the given options

Question No: 28 ( Marks: 1 ) - Please choose one

---

In the member initializer list, the data members are initialized,

- ▶ From left to right
- ▶ From right to left
- ▶ In the order in which they are defined within class
- ▶ None of the given options

Question No: 29 ( Marks: 1 ) - Please choose one

---

new operator allocates memory from free store and return \_\_\_\_\_.

- ▶ A pointer
- ▶ A reference
- ▶ An integer

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► A float

Question No: 30 ( Marks: 1 ) - Please choose one

---

"new" and "delete" keywords are \_\_\_\_\_ in C++ language.

► Built-in- Function

► Operators

► **Memory Allocation Function**

► None of the given options

Question No: 31 ( Marks: 1 )

---

What is a constructor in class?

Ans:

Class constructor, is the method specific to a type as a whole that run after the type is loaded and before any of the type's members are accessed. Class constructors are used for static field initialization. Only one class constructor per type is permitted, and it cannot use the vararg (variable argument) calling convention. Normally, class constructors are never called from the IL code. If a type has a class constructor, this constructor is executed automatically after the type is loaded. However, a class constructor, like any other static method, can be called explicitly. As a result of such a call, the global fields of the type are reset to their initial values. Calling class constructor explicitly does not lead to type reloading.

Question No: 32 ( Marks: 1 )

---

What are the two types of conversion for user-defined data types?

Types of conversion

The possible types of conversion are:

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Standard conversion:

This applies to:

Single-byte character sets (SBCS)

Graphic or double-byte character sets (DBCS)

Mixed character sets (containing SBCS and DBCS data)

Multi-byte character sets (MBCS)

By default, to binary data in INTEL format.

No conversion:

This applies to:

Character data encoded as UCS-2 or UTF-8

By default, to binary data in System

Packed decimal data.

Question No: 33 ( Marks: 2 )

---

Is there a way to increase the size of already allocated memory chunk ? Can the same chunk be increased or not?

Ans:

Dynamic memory allocation often makes up a large part of program execution time. Different variants of the best-fit allocator are implemented and their space and time costs measured and compared.

Reallocating an *already allocated chunk* uses the `realloc()` library function call.

Void `realloc(void*ptr,size_t size)`

Question No: 34 ( Marks: 2 )

---

Give the general syntax of class template.

Ans:”

The general syntax of class template is.

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```
template <class myType>
myType GetMax (myType a, myType b)
{
return (a>b?a:b);
};
```

Question No: 35 ( Marks: 3 )

---

What is the difference between structure and class?

Ans:

1. The difference between a class and a structure is that, by default, all of the members of a class are private and, by default, all of the members of a structure are public.
2. 'this' pointer will work only in class.
3. Structure are value type where as class are reference type.

Question No: 36 ( Marks: 3 )

---

How many arguments does binary member operator function and binary non-member operator function take?

Ans:

A *binary operator* shall be implemented either by a non-static *member function* with one parameter or by a *non-member function* with two parameters.

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Question No: 37 ( Marks: 3 )

---

Find the error in the given code

```
for ( int i=0; i<numRows; i++)
{
for(int j=0; j<numCols; j++)
{
elements[ i , j] = m.elements[i][j];
}
}
```

Ans:”

It is multiplication of two multiplication so here I m presenting a sample code to multiply two matrix a , b and the result will be stored in matrix C

```
#include<iostream.h>
void main()
{
int a[3][3] , b[3][3] , c[3][3];

int i , j , k;
cout<<"Enter Matrix A";
for( i = 0 ; i < 3 ; i++)
for( j = 0 ; j < 3 ; j++)
cin>>a[i][j];
cout<<"Enter Matrix B";
for( i = 0 ; i < 3 ; i++)
for( j = 0 ; j < 3 ; j++)
cin>>b[i][j];
for( i = 0 ; i < 3 ; i++)
for( j = 0 ; j < 3 ; j++)
{
c[i][j] = 0;
for( k = 0 ; k < 3 ; k++)
c[i][j] += a[i][k]*b[k][j];
}
cout<<"The resultant matrix is ";
for( i = 0 ; i < 3 ; i++)
{
```

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```
for( j = 0 ; j < 3 ; j++)  
    cout<<a[i][j]<<" "  
cout<<endl;  
}  
}
```

Question No: 38 ( Marks: 5 )

Write the C++ syntax for making a class friend of other class.

Ans:

Ans:

Friend class is one which has been declared so (as a friend) inside other class to make it access the private members of the class which has extended it's friendship.

For Example,

```
class A  
{  
private:  
.....  
public:  
.....
```

```
friend class B;  
};
```

```
class B  
{  
.....  
.....  
};
```

As in the above code snippet, class A has extended it's friendship to class B by declaring B as it's friend inside it's area.

Since the Class B has become a friend of A, B can directly access all the private members of A. But the reverse is not possible.

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Question No: 39 ( Marks: 5 )

---

What is a template function? Give the general syntax of writing a template function.

Ans:

Function Templates

To perform identical operations for each type of data compactly and conveniently, use function templates. You can write a single function template definition. Based on the argument types provided in calls to the function, the compiler automatically instantiates separate object code functions to handle each type of call appropriately. The STL algorithms are implemented as function templates.

Syntax:

```
Template<classT>
CLASS class-name()
{
//Definition of class
};
Class name<T>::function name (argument list)
{
//Function body
};
```

Question No: 40 ( Marks: 10 )

---

Write a program which contains a class student. The class should contain two char pointer variables Name, and department. The class should further contain constructors, overload the stream insertion operator (<<) for this class.

In main function create two objects and display these objects.

```
#include<iostream>
#include<conio>
#include <cstdlib>
using namespace std;

class student {
private:
```

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```
char name[30] ;  
char department[30] ;
```

public:

Question No: 41 ( Marks: 10 )

---

What is Standard Template Library (STL) also describe its advantages?

Ans:

The C++ STL (Standard Template Library) is a generic collection of class templates and algorithms that allow programmers to easily implement standard data structures like queues, lists and stacks.

Bottom of Form

STL Containers

The C++ STL provides two kinds of containers:

Sequence Containers

C++ Vectors

C++ Lists

C++ Double-Ended Queues

Associative Containers

C++ Maps

C++ Multimaps

C++ Sets

C++ Multisets

In addition, the C++ standard library provides several non-STL containers.

They can be considered containers, but don't meet all the requirements of STL containers.

Container Adapters

C++ Stacks

C++ Queues

C++ Priority Queues

Others

C++ Bitsets

C++ Valarrays

The idea behind the C++ STL is that the hard part of using complex data structures has already been completed. If a programmer would like to use a stack of integers, all one has to do is use this code:

```
stack<int> myStack;
```

With minimal effort, one can now push and pop integers onto this stack. Through the magic of C++ Templates, one could specify any data type, not just integers. The STL Stack class will provide generic functionality of a stack, regardless of the data in the stack.

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## Advantages of (STL)

Templates are easier to write than writing several versions of your similar code for different types. You create only one generic version of your class or function instead of manually creating specializations.

Templates can be easier to understand, since they can provide a straightforward way of abstraction type information.

Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.

Templates help in utilizing compiler optimizations to the extreme.

## FINAL TERM EXAMINATION CS201- Introduction to Programming

Question No: 1 (Marks: 1) - Please choose one

When we define an array of objects then,

- Destructor will call once for whole array
- Destructor will call for each object of the array
- Destructor will never call
- Depends on the size of array

Question No: 2 (Marks: 1) - Please choose one

We can also create an array of user define data type

- True
- False

Question No: 3 (Marks: 1) - Please choose one

What is the sequence of event(s) when allocating memory using new operator?

- Only block of memory is allocated for objects
- Only constructor is called for objects
- Memory is allocated first before calling constructor
- Constructor is called first before allocating memory

Question No: 4 (Marks: 1) - Please choose one

We can delete an array of objects without specifying [] brackets if a class is not doing dynamic memory allocation internally

- True
- False

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Question No: 5 ( Marks: 1 ) - Please choose one

The declarator of Plus (+) member operator function is

- Class-Name operator + (Class-Name rhs)
- Operator Class-Name + ( )
- Operator Class-Name + ( rhs)
- Class-Name operator + ( )

Question No: 6 ( Marks: 1 ) - Please choose one

The second parameter of operator functions for << and >> are objects of the class for which we are overloading these operators

- True
- False

Question No: 7 ( Marks: 1 ) - Please choose one

Which of the following is correct way to initialize a variable x of int type with

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value 10?

- int x ; x = 10 ;
- int x = 10 ;
- int x, x = 10;
- x = 10 ;

Question No: 8 ( Marks: 1 ) - Please choose one

Default mechanism of function calling in case of array is \_\_\_\_\_ and in case of variable is \_\_\_\_\_

- Call by value, call by reference
- Call by referene, call by reference
- Call by reference, call by value
- Call by value, call by value

Question No: 9 ( Marks: 1 ) - Please choose one

What does STL stand for?

- Source template library
- Standard template library
- Stream template library
- Standard temporary library

Question No: 10 ( Marks: 1 ) - Please choose one

Skill(s) that is/are needed by programmers

- Paying attention to detail
- Think about the reusability
- Think about user interface
- All of the given options

Question No: 11 ( Marks: 1 ) - Please choose one

For which array, the size of the array should be one more than the number of elements in an array?

- int
- double
- float
- char

Question No: 12 ( Marks: 1 ) - Please choose one

new and delete are \_\_\_ whereas malloc and free are

- Functions, operators
- Classes, operators
- Operators, functions
- Operators, classes

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Question No: 13 ( Marks: 1 ) - Please choose one

The prototype of friend functions must be written \_\_the class and its definition

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must be written

- inside, inside the class
- inside, outside the class
- outside, inside the class
- outside, outside the class

Question No: 14 ( Marks: 1 ) - Please choose one  
Friend function of a class are \_\_\_\_\_ of a class.

- Non-member functions
- Friend functions
- Any function outside class
- None of the given options

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Question No: 15 ( Marks: 1 ) - Please choose one

If overloaded plus operator is implemented as non-member function then which of the following statement will be true for the statement given below?

obj3 = obj1 + obj2 ;

- obj2 will be passed as an argument to + operator whereas obj1 will drive the + operator
- obj1 will drive the + operator whereas obj2 will be passed as an argument to + operator
- Both objects (obj1, obj2) will be passed as arguments to the + operator
- Any of the objects (obj1, obj2) can drive the + operator

Question No: 16 ( Marks: 1 ) - Please choose one

Which one of the following is the declaration of overloaded pre-increment operator implemented as member function?

- Class-name operator +() ;
- Class-name operator +(int) ;
- Class-name operator ++() ;
- Class-name operator ++(int) ;

Question No: 17 ( Marks: 1 ) - Please choose one

For cin, the source is normally a \_\_\_\_\_ and destination can be

- File, native data type
- Disk, user-define type
- Keyboard, variable
- File, user-define type

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Question No: 18 ( Marks: 1 ) - Please choose one

We can do condition compilation with pre processor directives.

- True
- False

Question No: 19 ( Marks: 1 ) - Please choose one

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The programs, in which we allocate static memory, run essentially on

- Heap
- System Cache
- None of the given options
- Stack

Question No: 20 ( Marks: 1 ) - Please choose one

A template function must have at least ----- or more arguments <http://vustudents.ning.com>

- Zero
- One
- Two
- Three

Question No: 21 ( Marks: 1 ) - Please choose one

The default value of a parameter can be provided inside the

- function prototype
- function definition
- both function prototype or function definition
- none of the given options

Question No: 22 ( Marks: 1 ) - Please choose one

While calling function, the arguments are assigned to the parameters from

- left to right
- right to left
- no specific order is followed
- none of the given options

Question No: 23 ( Marks: 1 ) - Please choose one

When an operator function is defined as member function for a binary Plus (+) operator then the number of argument it take is/are <http://vustudents.ning.com>

- Zero
- One
- Two
- N arguments

Question No: 24 ( Marks: 1 ) - Please choose one

new operator allocates memory from free store and return

- A pointer
- A reference

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- An integer
- A float

Question No: 25 ( Marks: 1 ) - Please choose one

With user-defined data type variables (Objects), self assignment can produce

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- Syntax error
- Logical error
- Link error
- Non of the given options

Question No: 26 ( Marks: 1 ) – Write Simple Program

Assignment operator is used to initialize a newly declared object from existing object

- True
- False <http://vustudents.ning.com>

Question No: 27 ( Marks: 1 ) – Briefly define/Justify

When an object of a class is defined inside an other class then,

- Constructor of enclosing class will be called first
- Constructor of inner object will be called first
- Constructor and Destructor will be called simultaneously
- None of the given options

Question No: 28 ( Marks: 1 ) – Brief answer required

In the member initializer list, the data members are initialized,

- From left to right
- From right to left
- In the order in which they are defined within class
- None of the given options

Question No: 29 ( Marks: 1 ) - Brief answer required

"new" and "delete" keywords are \_\_\_ in C++ language

- Built-in- Function
- Operators
- Memory Allocation Function
- None of the given options

Question No: 30 ( Marks: 2 ) - Brief answer required

What are the two types of conversion for user-defined data types?

Question No: 31 ( Marks: 2 ) - Brief answer required

Give the general syntax of class template.

Question No: 32 ( Marks: 2 ) - Brief answer required

What is a constructor in class? <http://vustudents.ning.com>

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Question No: 33 ( Marks: 2 ) - Brief answer required  
Is there a way to increase the size of already allocated memory chunk ? Can the same chunk be increased or not?

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Operator overloading can be performed through \_\_\_\_\_.

- ▶ Classes
- ▶ **Functions**
- ▶ Operators
- ▶ Reference

Question No: 2 ( Marks: 1 ) - Please choose one

When a value is referred by a normal variable then it is known as,

- ▶ Direct Reference
- ▶ **Indirect Reference**
- ▶ Partial Reference
- ▶ Proper Reference

When a value is referred by a normal variable is known as direct reference

Question No: 3 ( Marks: 1 ) - Please choose one

Which of the following function is used to increase the size of already allocated memory chunk?

▶ **malloc**

- ▶ calloc
- ▶ realloc
- ▶ free

Question No: 4 ( Marks: 1 ) - Please choose one

Which of the following is NOT a preprocessor directive?

- ▶ #error
- ▶ #define
- ▶ #line
- ▶ **#undef**

list of preprocessors

• #include • #include "filename" • #define • #undef • #ifdef • #ifndef • #if • #else • #elif • #endif • #error • #line • #pragma • #assert

Question No: 5 ( Marks: 1 ) - Please choose one

The stream objects cin and cout are included in which header file?

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- ▶ **iostream.h**
- ▶ fstream.h
- ▶ istream.h
- ▶ ostream.h

Question No: 6 (Marks: 1) - Please choose one

Overloaded delete operator function takes the same parameter as an argument returned by new operator function.

- ▶ **True**
- ▶ False

The same pointer that is returned by the new operator, is passed as an argument to the delete operator. These rules apply to both, if operators (new and delete) are overloaded as member or non-member operators (as global operators).

Question No: 7 (Marks: 1) - Please choose one

When an array of object is created dynamically then there is no way to provide parameterized constructors for array of objects.

- ▶ **True**

- ▶ False

if we are allocating an array of objects, there is no way to pass arguments to objects' constructors. Therefore it is required that the objects that are stored in such an array have a no-argument constructor.

Question No: 8 (Marks: 1) - Please choose one

C is widely known as development language of \_\_\_\_\_ operating system.

- ▶ Linux
- ▶ Windows
- ▶ **Unix**
- ▶ Mac OS

In the start C became widely known as the development language of the UNIX operating system, and the UNIX operating system was written by using this C language. The C language is so powerful that the compiler of C and other various operating systems are written in C.

Question No: 9 (Marks: 1) - Please choose one

Computer can understand only machine language code.

- ▶ **True**

- ▶ False

Question No: 10 (Marks: 1) - Please choose one

We can not define a function as a friend of a Template class.

- ▶ True
- ▶ **False**

Class templates can have friends. A class or class template, function, or function template can be a friend to a template class. Friends can also be specializations of a class template or function template, but not partial specializations.

Question No: 11 (Marks: 1) - Please choose one

What will be the value of 'a' and 'b' after executing the following statements?

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- ```
a = 3;
b = a++;
```
- ▶ 3, 4
  - ▶ 4, 4
  - ▶ 3, 3
  - ▶ 4, 3

Question No: 12 ( Marks: 1 ) - Please choose one  
Consider the following code segment. What will be the output of following code?

```
int addValue (int *a){
int b = (*a) + 2;
return b ;
}
main () {
int x =6 ;
cout << x << “,” ;
cout << addValue(&x) << “,” ;
cout << x ;
}
```

- ▶ 6,8,6
- ▶ 6,6,8
- ▶ 6,8,8
- ▶ 6,6,6

Question No: 13 ( Marks: 1 ) - Please choose one  
\_\_\_\_\_ is used to trace the logic of the program and correct the logical errors.

- ▶ Compiler
- ▶ Editor
- ▶ Linker
- ▶ Debugger

Question No: 14 ( Marks: 1 ) - Please choose one  
new and delete are \_\_\_\_\_ whereas malloc and free are \_\_\_\_\_.

- ▶ Functions, operators
- ▶ Classes, operators
- ▶ Operators, functions
- ▶ Operators, classes

Hence, we can call new and delete operators, P# 342

we have allocated a memory space for our use by malloc function. P# 285

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Question No: 15 (Marks: 1) - Please choose one

Like member functions, \_\_\_\_\_ can also access the private data members of a class.

- ▶ Non-member functions
- ▶ **Friend functions**
- ▶ Any function outside class
- ▶ None of the given options

Question No: 16 (Marks: 1) - Please choose one

Which situation would require the use of a non-member overloaded operator?

- ▶ **The overloaded operator is an Assignment operator.**
- ▶ **The left most operand is an object of a class.**
- ▶ The left operand is built-in data type.
- ▶ The operator returns a reference.

When an operator function is implemented as a non-member function, the left-most operand may be an object of the operator's class, an object of a different class, or a built-in type

Question No: 17 (Marks: 1) - Please choose one

The stream insertion and stream extraction operators are already overloaded for \_\_\_\_\_.

- ▶ User-defined data types
- ▶ **Built-in data types**
- ▶ User-defined and built-in data types
- ▶ None of the given options

Question No: 18 (Marks: 1) - Please choose one

If we define an identifier with the statement `#define PI 3.1415926` then during the execution of the program the value of PI \_\_\_\_\_.

- ▶ can not be replaced
- ▶ None of the given options
- ▶ **Remain constant.**
- ▶ can be changed by some operation

Question No: 19 (Marks: 1) - Please choose one

Assignment operator is -----associative.

- ▶ **right**
- ▶ left
- ▶ binary
- ▶ unary

You can assign values to several variables in a single statement. For example, the following code sets the contents of apples and oranges to the same value:

```
apples = oranges = 10;
```

The assignment operator is right associative, so this statement executes by first storing the value 10 in oranges and then storing the value in oranges in apples, so it is effectively

```
apples = (oranges = 10);
```

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Question No: 20 (Marks: 1) - Please choose one

When ever dynamic memory allocation is made in C/C++, it is freed\_\_\_\_\_.

- ▶ Explicitly
- ▶ **Implicitly**
- ▶ Both explicitly and implicitly
- ▶ None of the given options

Question No: 21 (Marks: 1) - Please choose one

The appropriate data type to store the number of rows and columns of the matrix is\_\_\_\_\_.

- ▶ float
- ▶ **int**
- ▶ char
- ▶ none of the given options.

Question No: 22 (Marks: 1) - Please choose one

Which of the following function do NOT initialize the chunk of memory to all zero?

- ▶ calloc() function
- ▶ Both malloc() and calloc()
- ▶ None of the above
- ▶ **malloc() function**

The malloc function differs from calloc in the way that the space allocated by malloc is not initialized and contains any values initially.

Question No: 23 (Marks: 1) - Please choose one

The function free() returns back the allocated memory got thorough calloc and malloc to\_\_\_\_\_.

- ▶ stack
- ▶ **heap**
- ▶ stack and heap
- ▶ None of the given options

Question No: 24 (Marks: 1) - Please choose one

width() is member function of\_\_\_\_\_

- ▶ cin object
- ▶ cout object
- ▶ **Both cin and cout object**
- ▶ None of the given option

Question No: 25 (Marks: 1) - Please choose one

Templates are not type safe.

- ▶ true
- ▶ **false**

Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.

Question No: 26 (Marks: 1) - Please choose one

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A Matrix can be composed of ints, floats or doubles as their elements. Best way is to handle this , \_\_\_\_\_

- ▶ Write a separate class to handle each
- ▶ Use templates
- ▶ Use strings to store all types
- ▶ None of the given options

A *Matrix* can be composed of *ints*, *floats* or *doubles* as their elements. Instead of handling these data types separately, we can write *Matrix* class as a template class and write code once for all native data types. While writing this template class, the better approach to write will be, to go with a simple data type (e.g. *double*) first to write a *Matrix* class and then extend it to a template class later.

Question No: 27 ( Marks: 2 )

Give the general syntax of class template.

template

```
class myclass { ---} ;
```

Question No: 28 ( Marks: 2 )

What is a truth Table?

There are some areas where the decision structures become very complicated. Sometimes, we find it difficult to evaluate a complicated logical expression. Sometimes the logic becomes extremely complicated so that even writing it as a simple syntax statement in any language. It becomes complicated to determine what will be evaluated in what way. We know the concept of truth table. The truth tables are very important. These are still a tool available for analyzing logical expressions. We will read logic design in future, which is actually to do with chips and gates. How we put these things together.

Question No: 29 ( Marks: 2 )

What will be the output of following code, if user input a number 123?

```
int input ;  
cin >> oct >> input;  
cout << hex << input ;
```

53

Rational: it will take 123 as octal and print it in hex form which is 53.

Question No: 30 ( Marks: 2 )

What is principle of friendship in the context of functions and classes?

Class can declare a friend function and someone from outside the class cannot declare itself friend of a class.

A friend function can access the private variables of class just like a member function

Question No: 31 ( Marks: 3 )

What are the limitations of the friendship relation between classes?

Class can declare a friend class from inside and someone from outside the class cannot declare itself friend of a class.

Question No: 32 ( Marks: 3 )

Suppose an object of class A is declared as data member of class B.

- The constructor of which class will be called first? a
- The destructor of which class will be called first? b

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Question No: 33 ( Marks: 3 )

Define static variable. Also explain life time of static variable?

When you declare a static variable (native data type or object) inside a function, it is created and initialized only once during the lifetime of the program

Question No: 34 ( Marks: 5 )

Write a program which defines three variables of type double which store three different values including decimal points, using setprecision manipulators to print all these values with different number of digits after the decimal number.

```
#include
#include
main () {
double a = 12.12345;
double b = 13.123456;
double c = 14.1234567;
cout << setprecision (5) << a << endl;
cout << setprecision (2) << a << endl;
cout << setprecision (3) << a << endl;
}
```

Question No: 35 ( Marks: 5 )

Let we have a class,

```
class String
{
private:
char buf[25];
};
```

Write code for assignment (=) operator function which assign one String object to other object. Your code should also avoid self assignment

Answer:

```
void String::operator = ( const String &other )
{ int length ;
length = other.length();
delete buf;
buf = new char [length + 1];
strcpy( buf, other.buf); }
```

Question No: 36 ( Marks: 5 )

Read the given below code and explain what task is being performed by this function

```
Matrix :: Matrix ( int row , int col )
{
numRows = row ;
numCols = col ;
elements = new ( double * ) [ numRows ] ;
for ( int i = 0 ; i < numRows ; i ++ )
{
elements [ i ] = new double [ numCols ] ;
for ( int j = 0 ; j < numCols ; j ++ )
```

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```
elements [ i ] [ j ] = 0.0 ;  
}  
}
```

Hint : This function belong to a matrix class, having

Number of Rows = numRows

Number of Columns = numCols

Marks: 58

**Question No: 1 ( Marks: 1 ) - Please choose one**

\*.doc is \_\_\_\_\_ by type.

- ▶ Sequential File
- ▶ Random Access File
- ▶ Data File
- ▶ Record File

**Question No: 2 ( Marks: 1 ) - Please choose one**

Which of the following is NOT a preprocessor directive?

- ▶ #error
- ▶ #define
- ▶ #line
- ▶ #undef

**Question No: 3 ( Marks: 1 ) - Please choose one**

The return type of operator function must always be void.

- ▶ True
- ▶ False

The syntax of the prototype of the overloaded operator function is: return-type operator operator-symbol (parameter-list);

**Question No: 4 ( Marks: 1 ) - Please choose one**

What does (\*this) represents?

- ▶ The current function of the class
- ▶ The current pointer of the class
- ▶ The current object of the class
- ▶ A value of the data member

Whenever an object calls a member function, the function implicitly gets a pointer from the calling object. That pointer is known as this pointer. 'this' is a key word. We cannot use it as a variable name. 'this' pointer is present in the function, referring to the calling object. For example, if we have to refer a member, let's say buf, of our String class, we can write it simply as: buf ;

**Question No: 5 ( Marks: 1 ) - Please choose one**

The statement `cin.get ();` is used to,

- ▶ Read a string from keyboard
- ▶ Read a character from keyboard

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- ▶ Read a string from file
- ▶ Read a character from file

**Question No: 6 (Marks: 1) - Please choose one**

When we do dynamic memory allocation in the constructor of a class, then it is necessary to provide a destructor.

- ▶ True
- ▶ False

**Question No: 7 (Marks: 1) - Please choose one**

Overloaded new operator function takes parameter of type `size_t` and returns

- ▶ void (nothing)
- ▶ void pointer
- ▶ object pointer
- ▶ int pointer

**Question No: 8 (Marks: 1) - Please choose one**

The second parameter of operator functions for `<<` and `>>` are objects of the class for which we are overloading these operators.

- ▶ True
- ▶ False

The second parameter to operator `<<` is an object of the class that we are overloading the operator for. Similar is the case for operator `>>`.

**Question No: 9 (Marks: 1) - Please choose one**

C++ is a case-sensitive language

- ▶ True
- ▶ False

**Question No: 10 (Marks: 1) - Please choose one**

To include code from the library in the program, such as `iostream`, a directive would be called up using this command.

- ▶ `#include "iostream.h"`
- ▶ `include`
- ▶ `include`
- ▶ `#include`

**Question No: 11 (Marks: 1) - Please choose one**

A template function must have only generic data types.

- ▶ True
- ▶ False

Its not compulsory, only min we have one generic data type but we can have native data type as well.

**Question No: 12 (Marks: 1) - Please choose one**

Template class can not have static variables.

- ▶ True
- ▶ False

**Question No: 13 (Marks: 1) - Please choose one**

What will be the correct syntax to assign an array named `arr` of 5 elements to a pointer `ptr`?

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- ▶ \*ptr = arr ;
- ▶ ptr = arr ;
- ▶ \*ptr = arr[5] ;
- ▶ ptr = arr[5] ;

**Question No: 14 ( Marks: 1 ) - Please choose one**

What will be the correct syntax to access the value of fourth element of an array using pointer ptr?

- ▶ ptr[3]
- ▶ (ptr+3)
- ▶ \*(ptr+3)
- ▶ Both 1 and 3

try this demo program to confirm result I wrote for you.

2 option will print the reference rest 1,3 are right options

```
#include  
#include  
// #include
```

```
main()  
{  
int myarr [4]= {0,1,2,3};  
int *ptr ;  
ptr = myarr;  
cout<  
cout<<*(ptr+3);  
cout<<(ptr+3);  
int i = 0;  
cin>> i;  
}
```

**Question No: 15 ( Marks: 1 ) - Please choose one**

If most significant bit of un-signed number is 1 then it represents a positive number.

- ▶ True
- ▶ False

The most significant bit is used as a sign bit. If this bit is zero, the number is considered positive. However, if it is 1, the number will be considered negative.

**Question No: 16 ( Marks: 1 ) - Please choose one**

If there is a symbol (& sign) used with the variable name followed by data type then it refers to \_\_\_\_\_ and if & is being used with variable name then it refers to \_\_\_\_\_.

- ▶ Address of variable, reference variable
- ▶ Reference variable, value of variable
- ▶ Reference variable, address of variable
- ▶ Address of variable, value of variable

we see a data type followed by & sign, it's a reference. And when the & sign is being used in the code with a variable name then it is the address of the variable

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**Question No: 17 (Marks: 1) - Please choose one**

We can also do conditional compilation with preprocessor directives.

- ▶ True
- ▶ False

**Question No: 18 (Marks: 1) - Please choose one**

The default value of a parameter can be provided inside the \_\_\_\_\_

- ▶ function prototype
- ▶ function definition
- ▶ both function prototype or function definition
- ▶ none of the given options.

The default value of a parameter is provided inside the function prototype or function definition.

**Question No: 19 (Marks: 1) - Please choose one**

Classes defined inside other classes are called \_\_\_\_\_ classes

- ▶ looped
- ▶ nested
- ▶ overloaded
- ▶ none of the given options.

**Question No: 20 (Marks: 1) - Please choose one**

What purpose do classes serve?

- ▶ Data encapsulation
- ▶ Providing a convenient way of modeling real-world objects
- ▶ Simplifying code reuse
- ▶ All of the given options

**Question No: 21 (Marks: 1) - Please choose one**

vuzs

Every class contains \_\_\_\_\_.

- ▶ Constructor
- ▶ Destructor
- ▶ Both a constructor and a destructor
- ▶ None of the given options

**Question No: 22 (Marks: 1) - Please choose one**

new operator is used to allocate memory from the free store during

- ▶ Compile Time
- ▶ Run Time
- ▶ Link Time
- ▶ None of the given options

**Question No: 23 (Marks: 1) - Please choose one**

When an object of a class is defined inside another class then,

- ▶ Destructor of enclosing class will be called first
- ▶ Destructor of inner object will be called first
- ▶ Constructor and Destructor will be called simultaneously
- ▶ None of the given options

**Question No: 24 (Marks: 1) - Please choose one**

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It is possible to define a class within another class.

- ▶ True
- ▶ False

**Question No: 25 ( Marks: 1 ) - Please choose one**

New and Delete are also used with \_\_\_\_\_ and data types as well.

- ▶ Class, Objects
- ▶ Structures, Pointers
- ▶ Both Class and structures
- ▶ None of above

we prefer to use **new** and **delete** operators as they are designed to work with classes and objects

**Question No: 26 ( Marks: 1 ) - Please choose one**

With New keyword, data types and class members are initialized with meaningful values instead of garbage.

<http://vuzs.net/>

- ▶ True
- ▶ False

**Question No: 27 ( Marks: 2 )**

How many arguments a Unary Operator take? Can we make a binary operator as unary operator?

Ans: Unary operator takes only one argument like `i++` or `i--` (Post increment or post decrement operators for integers) or `++i`, `--i` (Pre increment or pre decrement operators for integers), we can not make Unary operator as binary or binary as Unary operator.

**Question No: 28 ( Marks: 2 )**

Which arithmetic operators cannot have a floating point operand?

Ans:

Modulus operator

This operator can only be used with integer operands ONLY

**Question No: 29 ( Marks: 2 )**

What are manipulators? Give one example.

Ans:

The manipulators are like something that can be inserted into stream, effecting a change in the behavior. For example, if we have a floating point number, say  $\pi$ , and have written it as `float pi = 3.1415926`; Now there is need of printing the value of `pi` up to two decimal places i.e. 3.14. This is a formatting functionality. For this, we have a manipulator that tells about width and number of decimal points of a number being printed.

Some manipulators are parameter less. We simply use the name of the manipulator that works. For example, we have been using `endl`, which is actually a manipulator, not data. When we write `cout << endl`; a new line is output besides flushing the buffer. Actually, it manipulates the output stream.

**Question No: 30 ( Marks: 2 )**

Write down piece of code that will declare a matrix of 3x3. And initialize all its locations with 0;

Ans:

```
int matrix [3] [3] ;  
matrix [0] [0] = 0;  
matrix [0] [1] = 0;  
matrix [0] [2] = 0;  
matrix [1] [0] = 0;
```

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```
matrix [1] [2] = 0;  
matrix [1] [2] = 0;  
matrix [2] [0] = 0;  
matrix [2] [1] = 0;  
matrix [2] [2] = 0;
```

we can also do it as given below

```
int matrix [3][3] = { 0 }; //all elements 0
```

**Question No: 31 (Marks: 3)**

Which one (copy constructor or assignment operator) will be called in each of the following code segment?

- 1) Matrix m1 (m2);
- 2) Matrix m1, m2;  
m1 = m2;
- 3) Matrix m1 = m2;

**Ans:**

- 1) Matrix m1 (m2); **copy constructor**
- 2) Matrix m1, m2;  
m1 = m2; **assignment operator**
- 3) Matrix m1 = m2; **assignment operator**

**Question No: 32 (Marks: 3)**

What will be the output of following function if we call this function by passing int 5?

```
template T reciprocal(T x) {return (1/x); }
```

**Ans:**

1/5

**Question No: 33 (Marks: 3)**

Identify the errors in the following member operator function and also correct them.

```
math * operator(math m);  
math * operator (math m)  
{  
math temp;  
temp.number= number * number;  
return number;  
}
```

**ANS:**

The errors are in the arguments of the member operation function and also in the body of operator member function.

Correct function should be

```
math *operator(math *m);  
math *operator (math *m)  
{  
math temp;  
temp = m;  
temp.number= number * number;
```

# K K CENTRE MPP

```
return temp.number;
```

```
}
```

**Question No: 34 ( Marks: 5 )**

Write a program which defines three variables of type double which store three different values including decimal points, using setprecision manipulators to print all these values with different number of digits after the decimal number.

Ans:

```
#include  
#include  
int main ()  
{  
double x1 = 12345624.72345  
double x2 = 987654.12345  
double x3 = 1985.23456  
cout << setprecision (3) << x1<< endl;  
cout << setprecision (4) << x2 << endl;  
cout << setprecision (5) << x3<< endl;  
return 0;  
}
```

**Question No: 35 ( Marks: 5 )**

What are the advantages and disadvantages of using templates?

Ans:

Many thing can be possible without using templates but it do offer several clear advantages not offered by any other techniques:

**Advanatages:**

- Templates are easier to write than writing several versions of your similar code for different types. You create only one generic version of your class or function instead of manually creating specializations.
- Templates are type-safe. This is because the types that templates act upon are known at compile time, so the compiler can perform type checking before errors occur.
- Templates can be easier to understand, since they can provide a straightforward way of abstracting type information.
- It help in utilizing compiler optimizations to the extreme. Then of course there is room for misuse of the templates. On one hand they provide an excellent mechanism to create specific type-safe classes from a generic definition with little overhead.

**Disadvantages:**

On the other hand, if misused

- Templates can make code difficult to read and follow depending upon coding style.
- They can present seriously confusing syntactical problems esp. when the code is large and spread over several header and source files.

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• Then, there are times, when templates can "excellently" produce nearly meaningless compiler errors thus requiring extra care to enforce syntactical and other design constraints. A common mistake is the angle bracket problem.

**Question No: 36 ( Marks: 5 )**

Suppose a program has a math class having only one data member **number**.

Write the declaration and definition of operator function to overload + operator for the statements of main function.

```
math obj1, obj2;  
obj2= 10 + obj1 ;
```

**Ans:**

```
#include  
math  
{  
  mth operator + (obj1,obj2)  
  mth operator + (obj1,obj2)  
{  
  mth operator + (obj1,obj2)  
  mth operator + (obj1,obj2)  
}  
}
```

## FINAL TERM EXAMINATION

CS201- Introduction to Programming

Time: 120 min

Marks: 75

**Question No: 1 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ There are mainly \_\_\_\_\_ types of software

- ▶ Two
- ▶ Three
- ▶ Four
- ▶ Five

**Question No: 2 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ seekg() and write() are functionally

- ▶ Different
- ▶ Identical
- ▶ Two names of same function
- ▶ None of the above

**Question No: 3 ( Marks: 1 ) - Please choose one**

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When a pointer is incremented, it actually jumps the number of memory addresses

- ▶ **According to data type**
- ▶ 1 byte exactly
- ▶ 1 bit exactly
- ▶ A pointer variable can not be incremented

**Question No: 4 ( Marks: 1 ) - Please choose one**  
setw is a parameterized manipulator.

- ▶ **True**
- ▶ **False**

**Question No: 5 ( Marks: 1 ) - Please choose one**

are manipulators.

- ▶ **True**
- ▶ **False**

**Question No: 6 ( Marks: 1 ) - Please choose one**

In functions that return reference, use \_\_\_\_\_ variables.

- ▶ **Local**
- ▶ **Global**
- ▶ **Global or static**
- ▶ **None of the given option**

**Question No: 7 ( Marks: 1 ) - Please choose one**

operator function is

- ▶ **Class-Name operator + (Class-Name rhs)**
- ▶ **operator Class-Name + ( )**
- ▶ **operator Class-Name + ( rhs)**
- ▶ **Class-Name operator + ( )**

**Question No: 8 ( Marks: 1 ) - Please choose one**

The compiler does not provide a copy constructor if we do not provide it.

- ▶ **True**
- ▶ **False**

eof(), bad(), good(), clear() all

The declarator of Plus (+) member

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**Question No: 9 ( Marks: 1 ) - Please choose one**

What is the functionality of the following syntax to delete an array of 5 objects named *arr* allocated using new operator?

**delete arr ;**

- ▶ Deletes all the objects of array
- ▶ Deletes one object of array
- ▶ Do not delete any object
- ▶ **Results into syntax error**

**Question No: 10 ( Marks: 1 ) - Please choose one**

What is the sequence of event(s) when allocating memory using new operator?

- ▶ Only block of memory is allocated for objects
- ▶ Only constructor is called for objects
- ▶ **Memory is allocated first before calling constructor**
- ▶ Constructor is called first before allocating memory

**Question No: 11 ( Marks: 1 ) - Please choose one**

What is the sequence of event(s) when deallocating memory using delete operator?

- ▶ Only block of memory is deallocated for objects
- ▶ Only destructor is called for objects
- ▶ Memory is deallocated first before calling destructor
- ▶ **Destructor is called first before deallocating memory**

**Question No: 12 ( Marks: 1 ) - Please choose one**

**new** and **delete** operators cannot be overloaded as member functions.

- ▶ True
- ▶ **False**

**Question No: 13 ( Marks: 1 ) - Please choose one**

The operator function of << and >> operators are always the member function of a class.

- ▶ True
- ▶ **False**

**Question No: 14 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ A template function must have at

least ----- generic data type

- ▶ Zero
- ▶ One
- ▶ **Two**
- ▶ Three

**Question No: 15 ( Marks: 1 ) - Please choose one**

If we do not mention any *return\_value\_type* with a function, it will return an \_\_\_\_\_ value.

- ▶ int
- ▶ void
- ▶ double
- ▶ float

Such function which do not return any value are called:

- ▶ int
- ▶ **void**
- ▶ double
- ▶ float

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**Question No: 16 ( Marks: 1 ) - Please choose one**

Suppose a program contains an array declared as `int arr[100]`; what will be the size of array?

- ▶ 0
- ▶ 99
- ▶ **100**
- ▶ 101

**Question No: 17 ( Marks: 1 ) - Please choose one**

The name of an array represents address of first location of array element.

- ▶ **True**
- ▶ False

**Question No: 18 ( Marks: 1 ) - Please choose one**

Reusing the variables in program helps to save the memory

- ▶ **True**
- ▶ False

**Question No: 19 ( Marks: 1 ) - Please choose one**

Which of the following option is true about new operator to dynamically allocate memory to an object?

- ▶ The new operator determines the size of an object
- ▶ **Allocates memory to object and returns pointer of valid type**
- ▶ Creates an object and calls the constructor to initialize the object
- ▶ All of the given options

**Question No: 20 ( Marks: 1 ) - Please choose one**

new and delete are \_\_\_\_\_ whereas malloc and free are \_\_\_\_\_.

- ▶ Functions, operators
- ▶ Classes, operators
- ▶ **Operators, functions**
- ▶ Operators, classes

**Question No: 21 ( Marks: 1 ) - Please choose one**

Like member functions, \_\_\_\_\_ can also access the private data members of a class.

- ▶ Non-member functions
- ▶ **Friend functions**
- ▶ Any function outside class
- ▶ None of the given options

**Question No: 22 ( Marks: 1 ) - Please choose one**

Which of the following statement is best regarding declaration of friend function?

- ▶ Friend function must be declared after public keyword.
- ▶ Friend function must be declared after private keyword.
- ▶ **Friend function must be declared at the top within class definition.**
- ▶ **It can be declared anywhere in class as these are not affected by the public and private keywords.**

**Question No: 23 ( Marks: 1 ) - Please choose one**

The operator function overloaded for an Assignment operator (=) must be

- ▶ Non-member function of class
- ▶ **Member function of class**
- ▶ Friend function of class
- ▶ None of the given options

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**Question No: 24 ( Marks: 1 ) - Please choose one**

For non-member operator function, object on left side of the operator may be

- ▶ Object of operator class
- ▶ Object of different class
- ▶ **Built-in data type**
- ▶ All of the given options

**Question No: 25 ( Marks: 1 ) - Please choose one**

The operator function will be implemented as \_\_\_\_\_, if obj1 drive the - operator whereas obj2 is passed as arguments to - operator in the statement given below.

**obj3 = obj1 - obj2;**

- ▶ Member function
- ▶ Non-member function
- ▶ **Friend function**
- ▶ None of the given options

**Question No: 26 ( Marks: 1 ) - Please choose one**

Which one of the following is the declaration of overloaded pre-increment operator implemented as member function?

- ▶ Class-name operator +() ;
- ▶ Class-name operator +(int) ;
- ▶ **Class-name operator ++() ;**
- ▶ Class-name operator ++(int) ;

**Question No: 27 ( Marks: 1 ) - Please choose one**

The static data members of a class are initialized \_\_\_\_\_

- ▶ **at file scope**
- ▶ within class definition
- ▶ within member function
- ▶ within main function

**Question No: 28 ( Marks: 1 ) - Please choose one**

Class is a user defined \_\_\_\_\_.

- ▶ **data type**
- ▶ memory referee
- ▶ value
- ▶ none of the given options.

**Question No: 29 ( Marks: 1 ) - Please choose one**

We can also define a user-defines manipulators.

- ▶ **True**
- ▶ False

**Question No: 30 ( Marks: 1 ) - Please choose one**

Automatic variable are created on \_\_\_\_\_.

- ▶ Heap
- ▶ Free store
- ▶ **static storage**
- ▶ stack

**Question No: 31 ( Marks: 1 )**

**How do we provide the default values of function parameters?**

Answer: The default value of a parameter is provided inside the function prototype or function definition. For example, we could declare the default function arguments for a function while declaring or defining it.

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**Question No: 32 ( Marks: 1 )**

**Why do java consider pointer as dangerous**

**Answer:**

The concept of pointers is very important but quite limited to C and C++. The modern languages, for example JAVA, describe pointers as dangerous. We can go anywhere in the memory and can change a value. There is another problem with pointers, which is that these could be pointing to nowhere.

**Question No: 33 ( Marks: 2 )**

**What is memory leak?**

**Answer:** size. When there is no memory on heap, the computer will stop running and there may be a system crash. This situation is called a memory leak.

**Question No: 34 ( Marks: 2 )**

**What does optimization the of code means?**

**Answer:**

Header file is a nice mechanism to put function prototypes and define constants (global constants) in a single file. That file can be included simply with a single line of code.

**Question No: 35 ( Marks: 3 )**

**What is the difference between structure and class?**

**Answer:**

In structures, some data variables are gathered, grouped and named as a single entity. Class and structure are very closely related. In classes, we group some data variables and functions. These functions normally manipulate these variables. Before going ahead, it is better to understand what a class is: "A class includes both data members as well as functions to manipulate that data"

**Question No: 36 ( Marks: 3 )**

See the following code segment.

```
template <class T>
```

```
class myclass {
```

```
private:
```

```
T x;
```

```
public:
```

```
myclass (T a) {
```

```
x = a;
```

```
}
```

```
};
```

Write the main function which creates two objects of class for int and double data types.

**Question No: 37 ( Marks: 3 )**

**Is it possible to define two functions as given below? Justify your answer.**

```
func(int x, int y)
```

```
func(int &x, int &y)
```

**Solution:**

No, it is impossible to define two functions as in the main function the way to call both functions is same. How does the compiler know that which functions is being called? There is no way for the compiler to find out. Therefore there is an

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ambiguity and that is not allowed. The only thing to realize is the side effect. Side effects are critical to take care of whenever you are doing call by reference.

**Question No: 38 ( Marks: 5 )**

Write a program using **getline()** member function to inputs a string up to delimiter character comma (,) and then display the string on the screen.

**Question No: 39 ( Marks: 5 )**

---

Do you think that friend functions violate encapsulation? Justify your answer.

Answer:

The friend functions of a class have access to the private data members of class. Despite being a good thing, there is possibility of vulnerability. We are opening our thoughts, inside view for somebody else. Without having 100% trust, it will be risky to make our thoughts and feelings public. We want that our private data is accessible to someone outside, not public for everybody. Otherwise, the data encapsulation and data-hiding concept will be violated. We keep the data members private and declare some specific functions that are not member of the class but friend of the class. As friends, they have access to the inside data structure of the class despite not being members.

**Question No: 40 (Marks: 10 )**

---

Write a simple program using the **get()** member function of **cin** object reading a text of **30** characters from the keyboard, store them in an array and then using **put()** member function of **cout** object to display them on the screen.

**Question No: 41 (Marks: 10 )**

---

Write a small program which defines two user-defined manipulators named **octal** and **hexadecimal**. These manipulators should display the decimal numbers into octal and hexadecimal.

In the main function, input a decimal number from the user and then display this decimal number into octal and hexadecimal using user-define manipulators named **octal** and **hexadecimal**.

## FINAL TERM EXAMINATION

Fall 2009

CS201- Introduction to Programming

Time: 120 min

Marks: 75

If we write a statement like **s2 = s1;** \_\_\_ will be the calling object and \_\_\_ will be passed to the = operator as an

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argument.

- s1, s1
- s1, s2
- s2, s1
- s2, s2

If we write a statement like `s2 = s1`; `s2` will be the calling object and `s1` will be passed to the `=` operator as an argument.

P# 397

```
cout << setfill('0') << setw(7) << 128 ;
```

- 0000128
- 0128128
- 1280000
- 0012800

default alignment is from left due to this it first prints 4 Zeros(`setw=7`, `digit=3` i.e 1-2-8,) 7-3=4 Zeros vuzs

The stream insertion and extraction operators are not already overloaded for \_\_\_\_\_

- Built-in data types
- User-defined data types
- Both built-in and user-defined types
- None of the given options

Constructors can not be overloaded like ordinary functions.

- True
- False

The constructors can be overloaded. We can write as many constructors as we require. At one time, the compiler will call the correct version of the constructor".P# 323 these solutions are meant to host at vuzs site only

Overloaded new operator function takes parameter of type `size_t` and returns

- void (nothing)
- void pointer
- object pointer
- int pointer

Also note that the new operator returns a void pointer. Any new operator we write must have this parameter and return type.

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Which of the following is the correct way to declare a variable x of integer type?

- x int ;
- integer x ;
- int x;**
- x integer

Reserve words cannot be used as a variable name.

- True**
- False

There are few data types in C language. These data types are reserved words of C language. The reserve words can not be used as a variable manes. P# 17

A template function must have at least ----- generic data type

- Zero
- One**
- Two
- Three

The function arguments must contain at least one generic data type. P# 499

Template functions can also be overloaded

- True
- False**

We can write overloaded template functions as long as there is use of different number or type of arguments.. P # 503

We can not make a member function of a class as template function.

- True
- False not sure**

When break statement is encountered in switch statement, it

- Stops the entire program
- Stops the execution of current statement**

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- Exits from switch statement
- None of the given options

We can also define a variable of user define data type (object) as static.

- True
- False

The declarator of Plus (+) member operator function is

- Class-Name operator + (Class-Name rhs)**
- operator Class-Name + ( )
- operator Class-Name + ( rhs)
- Class-Name operator + ( )

Let suppose

```
int a, b, c, d, e;  
a = b = c = d = e = 42;
```

This can be interpreted by the complier as:

- `a = (b = (c = (d = (e = 42))));`
- `(a = b = (c = (d = (e = 42))));`
- `a = b = (c = (d = (e = 42)));`
- `(a = b) = (c = d) = (e = 42);`

```
a = (b = (c = (d = (e = 42) ) ) ) ;
```

What will be the range of numbers generated by function `rand () % 9`?

- 0 to 9
- 1 to 9
- 0 to 8
- 1 to 8

When 6 divides any number, the remainder will always be less than 6. Ther result will be between therefore we will add 1. `1 + rand () % 6`;

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Which of the following is the correct function call having array named student of 10 elements as a parameter.

**addRecord(student[]);**

addRecord(student);

addRecord(student[10]);

addRecord(\*student);

when we pass array we don't give limit of array

Example:

## Pass array to function

```
#include<stdio.h>
#include<conio.h>
void read(int *,int);
void dis(int *,int);

void main()
{
    int a[5],b[5],c[5],i;

    printf("Enter the elements of first list \n");
    read(a,5);
    printf("The elements of first list are \n");
    dis(a,5);
}

void read(int c[],int i)
{
    int j;
    for(j=0;j<i;j++)
        scanf("%d",&c[j]);
    fflush(stdin);
}

void dis(int d[],int i)
{
    int j;
    for(j=0;j<i;j++)
        printf("%d ",d[j]);
    printf("\n");
}
```

Declaring structures does not mean that memory is allocated.

Example:

**True**

False

structures do not occupy any memory until it is associated with the structure variable

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Identifier is a name that can be given to variables, labels and functions.

True

False

An 'Identifier' means any name that the user creates in his/her program. These names can be of variables, functions and labels

If a class A declares itself a friend of class B and a class B declares itself a friend of class C then

Class A is also a friend of class C.

Class B is also a friend of class A.

**Class A is also a friend of class C if A declares C as its friend.**

Class A is also a friend of class C if C declares A as its friend.

If we want a two-way relationship, OtherClass will have to declare ClassOne as a friend class, resulting in a complete two-way relationship

Which of the following statement is best regarding declaration of friend function?

Friend function must be declared after public keyword.

Friend function must be declared after private keyword.

Friend function must be declared at the top within class definition.

**It can be declared anywhere in class as these are not affected by the public and private keywords.**

Friend is a very strong statement. It is too strong to be affected by public or private we can put it anywhere in the class

A pointer is a special type of variable that contain \_\_\_\_\_

**Memory Address**

Data values

Both Values and Memory

None of given of options

Pointer is a special type of variable that contains a memory address.

When memory for a program is allocated at run time then it is called \_\_\_\_\_

static memory allocation

**dynamic memory allocation**

stack memory allocation

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- virtual memory allocation

When we create an object of the class at run time, it will allocate memory according to our requirement. So there is no waste of memory and the situations in which we want to store large data in small memory or vice versa are prevented. So we do dynamic memory allocation inside these classes.

What purpose do classes serve?

- Data encapsulation
- Providing a convenient way of modeling real-world objects
- Simplifying code reuse
- All of the given options**

Which of the following function cannot be overloaded?

- Member functions
- Utility functions
- Constructor
- Destructor**

The destructors can be summarized as The destructors cannot be overloaded. The destructors take no arguments. The destructors don't return a value

The following prototype of unary operator function indicates that it is \_\_\_\_\_ .

**Date operator++ (int )**

- Member functions of post increment operator**
- Member functions of pre increment operator
- Non-member functions of post increment operator
- Non-member functions of pre increment operator

**Overloading Unary Operators**

```
// Preincrement operator overloaded as a member function.
Date Date::operator++()
{
    helpIncrement();
    return *this; // value return; not a reference return
}
```

```
// Postincrement operator overloaded as a member function.
// Note that the dummy integer parameter does not have a
// parameter name.
Date Date::operator++(int)
{
    Date temp = *this;
    helpIncrement();
}
```

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```
// return non-incremented, saved, temporary object
return temp; // value return; not a reference return
} // This paper was solved by vuzs Team and meant for hosting
at vuzs otherwise its stolen contents
```

Static variable which is defined in a function is initialized \_\_\_\_\_.

**Only once during its life time**

- Every time the function call
- Compile time of the program
- None of the above

Once the static variables are created, they exist for the life of the program. They do not die.

In the member initialize list, the data members are initialized,

**From left to right**

- From right to left
- In the order in which they are defined within class
- None of the given options

If we do not indent the code properly it will \_\_\_\_\_

- Be a syntax error
- Be a logical error
- Not be an error at all**
- None of the given options

We indent the code for better readability and understanding

Truth tables are used for analyzing \_\_\_\_\_.

**logical expressions**

- arithmetic expressions
- both logical and arithmetic expressions
- none of the given options.

The truth tables are very important. These are still a tool available for analyzing logical expressions.

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Static memory allocation is also known as \_\_\_\_\_

- Dynamic allocation
- Compile time allocation**
- Run time allocation
- None of the given options

This type of memory static allocation. It is also known as compile time allocation.

**( Marks: 1 )**

**What does getline() member function of cin stream do?**

Another member function of cin is getline(). It reads a complete buffer i.e. the number of character specified up to a delimiter we specify. We can write something like:

```
cin.getline(char *buffer, int buff_size, char delimiter = '\n')
```

**( Marks: 1 )**

**When memory is allocated dynamically using new operator within the constructor of class then what is an appropriate place to de-allocate the memory?**

Whenever we allocate memory with the new operator, it is our responsibility to de-allocate this memory after the termination of the program. To do this de-allocation, we have an operator delete. To de-allocate the memory, allocated with `p = new int ;` we will write delete

`(p) ;`

It will not delete the p rather, it will send the memory gotten and pointed by p back to the free store.

**( Marks: 2 )**

What will be the output of following code, if user input a number **123**?

```
int input ;  
cin >> oct >> input;  
cout << hex << input ;
```

**( Marks: 2**

**What is memory leak?**

suppose, the heap size is decreased as we had allocated memory from it despite the fact that it was never utilized. If this step of allocating memory and then destroy the pointer to this memory carries on then the size of the heap will going

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on to decrease. It may become of zero size. When there is no memory on heap, the computer will stop running and there may be a system crash. This situation is called a memory leak

**( Marks: 3 )**

**When we call calloc function to allocate memory and its return a NULL pointer what does it mean?**

Calloc function takes two arguments. The first argument is the required space in terms of numbers while the second one is the size of the space

Now we have to see what happens when either we ask for too much memory at a time of non-availability of enough memory on the heap or we ask for memory that is available on the heap , but not available as a single chunk?. In this case, the call to calloc will fail. When a call to memory allocation functions fails, it returns a NULL pointer.

**( Marks: 3 )**

Read the given code and explain code functionality.

```
Matrix :: Matrix ( const Matrix & m )
{
    numRows = m.numRows ;
    numCols = m.numCols ;
    elements = new ( double * ) [ numRows ] ;
    for ( int i = 0 ; i < numRows ; i ++ )
    {
        elements [ i ] = new double [ numCols ] ;
        for ( int j = 0 ; j < numCols ; j ++ )
            elements [ i ] [ j ] = m.elements [ i ] [ j ] ;
    }
}
```

**( Marks: 3 )**

**What is the keyword 'this' and what are the uses of 'this' pointer?**

Whenever an object calls a member function, the function implicitly gets a pointer from the calling object. That pointer is known as this pointer. 'this' is a key word. We cannot use it as a variable name. 'this' pointer is present in the function, referring to the calling object.

this pointer points to the current object.

**( Marks: 5 )**

**What do you mean by garbage collection and how it works in JAVA and C++ ?**

JAVA gives the concept of garbage collection with the use of references. Due to this garbage collection, we are free from the headache of de-allocating the memory. We allocate and use the memory. When it is no longer in use, JAVA automatically deletes (frees) it through garbage collection But in C and C++ languages, we have to take care of de-

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allocating the memory. In classes where we use dynamic memory, we have to provide destructors to free this memory. The languages keep evolving, new constructs will keep evolving in existing or new languages.

( Marks: 5 )

Explain the concept of separation of interface from the implementation in the context of classes, using a real world example.

( Marks: 10 )

Write a simple program using the **get()** member function of **cin** object reading a text of **30** characters from the keyboard, store them in an array and then using **put()** member function of **cout** object to display them on the screen.

( Marks: 10 )

Overload the Binary Assignment (=) Operator.

Write a program which has a class **List**, This class should have Two data members, an array of integers **list[]** and an integer variable **length** (i.e. number of elements in the list).The class should further contain a default constructor, a **Print()** function which display the list and a Function **insert()** which insert an element in the list and Assignment (=) Operator function, which contain code for the assignment of one object to other. .

In main function define two objects **list1** and **list2** and use the statement **list2 = list1;** and use (call ) **print** function with both objects

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