Sample Paper
FINALTERM EXAMINATION
Fall 2022
CS201 – Introduction to Programming

Time: 90 min
Marks: 60
Objective: 33 marks
Subjective: 27 marks

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Solved by Qalb-e-Momin

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Question No: 1 (Marks: 01) - Please choose the correct option

……. function is used to determine the current location while reading a file.

A. tellp()
B. tellg()
C. seekp()
D. seekg()

Question No: 2 (Marks: 01) - Please choose the correct option

……. operator can be used for masking of flags.

A. ^
B. &&
C. ||
D. >>

Question No: 3 (Marks: 01) - Please choose the correct option

What will be the output of the following code?

```
int main(){
```

```
    int i = 20;

    for(int i=1;i<10;i++);
    cout<<i;

    return 0;
}
```

A. 10
B. 20
C. 9
D. 1

Question No: 4 (Marks: 01) - Please choose the correct option

What will be the output of the following code?

```
int main() {
  change();
  return 0;
}
int change (int a=12){
   int b=12;
   a = a + b;
  cout<<a++;
}
```

A. 12
B. 24
C. 25
D. 26

Question No: 5 (Marks: 01) - Please choose the correct option

While handling files in C++, the default mode of "ifstream" library for opening file is.

A. ios::ate
B. ios::out
C. ios::in
D. ios::app

Question No: 6 (Marks: 01) - Please choose the correct option

In C++, “getline()” function is a built-in function that allows accepting and reading.

A. Single line
B. Multiple lines
C. Single and Multiple lines
D. Only multiword input

Question No: 7 (Marks: 01) - Please choose the correct option

Which one of the following is correct definition of structure?

A. struct Student{char name[30]}
B. struct Student {char name[30];}
C. struct Student {char name[35];};
D. struct {char name[30]};

Question No: 8 (Marks: 01) - Please choose the correct option

```
struct book {
 char title[20];
};

int main(){
 book * sptr;
}
```

From the above code the correct way to access the data member **title** of the structure **book** through pointer is?

A. sptr.title
B. sptr:title
C. sptr->title
D. .sptr*title

Question No: 9 (Marks: 01) - Please choose the correct option

What will be the output of the following program?

```
#include <iostream>
#define LIMIT 3

int main()
{
   for (int i = 2; i < LIMIT; i++) {
      std::cout << i* LIMIT << "\t";
   }
   return 0;
}
```

A. 6
B. 2 3 6
C. 3
D. 9

Question No: 10 (Marks: 01) - Please choose the correct option

The proper way of defining a macro is.

A. #define SIZE 5;
B. #define SIZE 5
C. Set SIZE 5;
D. #set SIZE 5

Question No: 11 (Marks: 01) - Please choose the correct option

In C++, dynamic memory allocation in done on _____ memory.

A. Static
B. Stack
C. Heap
D. Hard Disk

Question No: 12 (Marks: 01) - Please choose the correct option

Which of the following is not an acceptable class specifier?

A. public
B. private
C. protected
D. pointer

Question No: 13 (Marks: 01) - Please choose the correct option

_____ is another name for a class's data members.

A. Attribute
B. Method
C. Instance
D. Dimensions

Question No: 14 (Marks: 01) - Please choose the correct option

In C++, class data members are generally kept as _____.

A. public
B. private
C. protected
D. static

Question No: 15 (Marks: 01) - Please choose the correct option

To declare the friend function, which keyword is used?

A. Friend
B. FRIEND
C. FrienD
D. friend

Question No: 16 (Marks: 01) - Please choose the correct option

In C++, which of the following operator cannot be overloaded?

A. +
B. -
C. /
D. ->

Question No: 17 (Marks: 01) - Please choose the correct option

A class includes both data members as well as functions to manipulate the data. These functions are called _____.

A. Member functions
B. Constant functions
C. Rational functions
D. Memory functions

Question No: 18 (Marks: 01) - Please choose the correct option

Which of the following is known as an instance of a class?

A. Data member
B. Constructor
C. Member function
D. Object

Question No: 19 (Marks: 01) - Please choose the correct option

In friend function, which operator is utilized to access members of a class using class objects.

A. ::
B. +
C. *
D. .

Question No: 20 (Marks: 01) - Please choose the correct option

Which of the following is the correct way of referring a data member "buf" of a class name "String"? Consider "buf" data member declared as a character pointer.

A. buf;

B. this->buf;

C. *(this).buf;

D. *this.buf

Question No: 21 (Marks: 01) - Please choose the correct option

In C++, which of the following operator can be overloaded?

A. sizeof
B. ?:
C. ::
D. %

Question No: 22 (Marks: 01) - Please choose the correct option

When a unary operator is overloaded and is a member of a class, how many arguments need to be passed explicitly when it is called?

A. Zero
B. One
C. Two
D. Three

Question No: 23 (Marks: 01) - Please choose the correct option

What will be the output of following program in C++?

#include<iostream>

```
using namespace std;
class A
{
        int a;
        public:
                A(int x):a(x){}
                int geta() {return a;}
};
int main ()
{
   A M(10),N(20);
   N = M;
   cout<<N.geta();
   return 0;
}
```

A. 20
B. 10
C. 30
D. 15

Question No:24 (Marks: 01) - Please choose the correct option

Which of the following manipulators "Terminate a string with NULL"?

A. endl
B. flush
C. ends
D. ws

Question No: 25 (Marks: 01) - Please choose the correct option

What will be the output of following code snippet written in C++?

```
 int main(){
  double var = 3.14362987;
  cout<< setprecision(4) << var;
 }
```

A. 3.144

B. 3.143
C. 3.1436
D. 3.145

Question No: 26 (Marks: 01) - Please choose the correct option

Which of the following is not a format state flag?

A. ios::dec
B. ios::showpoint
C. ios::showcause
D. ios::right

Question No: 27 (Marks: 01) - Please choose the correct option

Which of the following is not a recommended way to use a copy constructor?

A. Explicit call to the copy constructor
B. Using "=" operator
C. In passing by value
D. In passing by reference

Question No: 28 (Marks: 01) - Please choose the correct option

If we press the key 1 from the keyboard to store it in integer *i*, the digit 1 travels as a(an) _____ but stored as number inside *i*.

A. integer
B. character
C. float
D. double

Question No: 29 (Marks: 01) - Please choose the correct option

In C++, for every stream, there should be _____.

A. Template and class
B. Source and destination
C. Function and operator
D. Structure and Union

Question No: 30 (Marks: 01) - Please choose the correct option

In C++, whenever have an "**&**" ampersand symbol appears on right hand side of an "=" assignment operator, it is taken as _____ of an object.

A. Pointer
B. Reference
C. Address
D. Function

Question No: 31 (Marks: 01) - Please choose the correct option

While writing nested classes in C++, no memory is allocated for it unless a/an _____ of it is created.

A. Function
B. Instance
C. Class
D. Operator

Question No: 32 (Marks: 01) - Please choose the correct option

In C++, which one from the following errors can be encountered when dealing with references.

A. Memory Leak
B. Dangling Reference
C. Static Reference
D. Global Reference

Question No: 33 (Marks: 01) - Please choose the correct option

In C++, operator overloading is quite similar to _____.

A. Macros.
B. Inline function
C. Function overloading
D. Object Creation

Question No: 34 (Marks: 01) - Please choose the correct option

Considering knowledge of using a friend functions in C/C++, choose which rule is applicable on friend functions?

A. private members cannot be accessed from anywhere
B. protected members cannot be accessed from anywhere
C. protected and private members can be accessed from outside the class
D. protected and private members cannot be accessed from outside the class

Question No: 35 (Marks: 01) - Please choose the correct option

The correct syntax for writing a template 'class student' of type 'T' is _____.

A. template <class T> class student { …. };
B. template <Class T> Class student{ …. };
C. Template <class T> class student { …. };
D. template <class student > class T { …. };

Question No: 36 (Marks: 01) - Please choose the correct option

In C/C++, the array index number for representing last element of an array of size 10 is _____.

A. 5
B. 7

C. 9
D. 11

Question No: 37 (Marks: 01) - Please choose the correct option

Trace the output of the following code segment.

```
int main(){
  int arr[2][3]= {{1, 2, 3}, {4, 5, 6}}
  cout<<arr[1][1];

}
```

A. 2
B. 4
C. 9
D. 5

✅ **2D Array Breakdown**

The array `arr` is a 2x3 matrix:

```
Index:    0      1
        -------  -------
       |1 2 3|  |4 5 6|
        -------  -------
```

In terms of index positions:

```
arr[0][0] = 1   arr[0][1] = 2   arr[0][2] = 3
arr[1][0] = 4   arr[1][1] = 5   arr[1][2] = 6
```

Question No: 38 (Marks: 01) - Please choose the correct option

What will be the output of the given code segment?

```
int arr[]={2,5,6,8,9,10,6,3,1};
int * ptr= &arr[1];
cout<<*(ptr+4);
```

A. 6
B. 10
C. 3
D. 1

1. Array `arr`:

```
Index:  0  1  2  3  4  5  6  7  8
Value:  2  5  6  8  9 10  6  3  1
```

2. Pointer Initialization:

```cpp
int *ptr = &arr[1];
```

So, `ptr` points to the **second element**, i.e., `ptr = arr + 1`.

3. Expression:

```cpp
*(ptr + 4)
```

- `ptr` is at `arr[1]`, so `ptr + 4` points to:

```
arr[1 + 4] = arr[5] = 10
```

Question No: 39 (Marks: 01) - Please choose the correct option

What will be the output of the given code segment?

```
int arr[]={2,5,6,8,9,10,6,3,1};
int * ptr= &arr[3];
cout<<*(ptr+4);                    // 3+4 =7(index) = 3 value
```

A. 10
B. 6
C. 3
D. 5

Question No: 40 (Marks: 01) - Please choose the correct option

Which one of the following is not a keyword and can be used as an identifier in C/C++?

A. friends
B. template
C. this
D. new

Question No: 41 (Marks: 03)

Determine the number of iterations the following loop will run.

```
 int op, lim, k;
 op = 6;
 lim = 0;
while (k <= 60) {
   k = op << lim;
   lim += 1;
 }
```

✓ Answer:

The loop runs 4 times.

Question No: 42 (Marks: 03)

What is the masking operator? Write the code snippet and determine the output of

expression which masks a variable int x = 100; with int m = 50;

Solution:

What is a Masking Operator?

In **C++**, the **masking operator** refers to the **bitwise AND operator (&)**. It is used to **mask (filter out)** certain bits in a number.

- **Masking operator:** Bitwise AND (&)
- **x = 100, m = 50**
- **Result of x & m = 32**

Output:

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Question No: 40 (Marks: 03)

What will be output of the following code segment?

```
class Output{
private:
  int a,b,c;
public:
  Output(){
    a = 8;
    b = 4;
    c = 0;
 }
void Display(){
  c=a/b;
  cout <<a<<"\n"<<b<<"\n"<<c;
 }
};
int main() {
Output ob;
ob.Display();
return 0;
}
```

Final Output:

8
4
2

Question No: 44 (Marks: 03)

Name the types of constructor used in C++. **Page#321**

Solution:

Constructor Overloading

Parameterized constructors

Simple constructors

Compiler Generated Constructor

Question No: 45 (Marks: 03)

Write the keywords used for auxiliary input output stream and printer output stream in DOS.

Solution:

In DOS, we have two more output streams i.e. *caux* (auxiliary input output stream) and *cprn* (printer output).

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Question No: 46 (Marks: 05)

What will be output of the following program?

```
#include <iostream>
using namespace std;
int main () {

  double x = 123.4;
  cout.precision(4);
```

```
 cout<< scientific;
 cout<< x << endl;
 return 0;

}
```

Solution:

The number 123.4 in **scientific notation** is:
1.234×10^2

Now, applying `precision(4)`:

Total significant digits = 4 → 1.234e+02

Question No: 47 (Marks: 05)

What will be the output of the following code written in C++. (Assuming memory is successfully allocated in both calls)

```
int main(){
        int *ptr, sum=0, i=0, n=3;

        ptr = (int *) malloc (n * sizeof(int));

        if (ptr==NULL) {
                        cout<<"Memory allocation is not successful";
                        return 1;
                }
        while (i<=n) {
             *(ptr+i) = i;
                i++;
        }

        n=5;

        ptr = (int *) realloc (ptr, n * sizeof(int));

        if (ptr == NULL){
           cout<<"Memory allocation is not successful";
        return 1;
        }
        for (int j = 0;j < = n; j++){
```

```
            *(ptr + j ) = j;
             sum +=*( ptr + j);
        }
        cout<<"sum="<<sum;
        free(ptr);
        return 0;
}
```

Final Output:

sum = 15

Question No: 48 (Marks: 05)

Trace the output of the following code.

```
class first
{
 friend void add(first *, int);
 private:
        int variable;
 public:
         void print()
         {
            cout << "Variable = " <<variable<<endl;
        }
        first();
};
first::first()
{
 variable = 0;
}
void add(first *x, int y){
        x->variable += y;
}

int main(){
  first z;
  z.print();
  add(&z, 10);
  z.print();
}
```

Final Output:

Variable = 0
Variable = 10

Question No: 49 (Marks: 05)

Write the C++ syntax to create and delete a dynamic array using new and delete operator.

Solution:

Create a dynamic array using new operator: **Page#411**

1. ***String *text ;***
2. ***text = new String [5] ;***

Delete a dynamic array using delete operator: **Page#412**

delete [] text ;

Question No: 50 (Marks: 05)

Carefully read and analyze the following code and determine its output.

```
class One {
    public:
        One(){
          cout << "Class One Constructor" << endl;
        }
        ~One(){
          cout << "Class One Destructor" << endl;
         }
};
class Three {
        private:
                One one;
        public:
                Three() {
                 cout << "Class Three Constructor" << endl;
                }
                ~Three(){
                        cout << "Class three Destructor" << endl;
```

```
                    }

};
class Two {

     private:
      Three three;
     public:
          Two(){
           cout << "Class Two Constructor" << endl;
          }
};

int main()
{
  Two two;
  return 0;
}
```

Final Output:

Class One Constructor
Class Three Constructor
Class Two Constructor
Class three Destructor
Class One Destructor

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