CSC 313 ASSIGNMENTS

1. What is the difference between Procedural programming and OOPS?
2. What is an abstraction? Give a simple but proper illustration of the concept using C++.
3. What is inheritance? Give a simple but proper illustration of the concept using C++.
4. What is a Class? Create a class of your own and fill up with objects that are a proper illustration of that class.
6. Define the terms Association, Aggregation and Composition
7. Consider the following Animal class.

```
class Animal{
      void walk(){
      System.out.println("I am walking");
       }
}
```

This class has only one method, walk. Next, we want to create a Bird class that also has a fly method. We do this using extends keyword:

```
class Bird extends Animal {
      void fly() {
      System.out.println("I am flying");
       }
}

Public class Solution{
      public static void main(String[] args){
       Bird bird = new Bird();
      bird.walk();
      bird.fly();
      }
}
```

What is the output of the above code segment and what is the OOP concept illustrated in this example called?

8. Create a class of your own and fill up with objects that are a proper illustration of that class.
9. What is Static Binding and Dynamic Binding?
10. What is an abstraction? Give a simple but proper illustration of the concept using C++.
11. Consider the following C++ program (recall that default constructors, i.e. constructors without arguments, in C++ do not need to be called explicitly):

```
class A {
      public:
            A() { a = 1; }
            int a;
};
class B : public A {
      public:
```

```
            B() { a += 1; }
};
class C : public A {
      public:
            C() { a *= 2; }
};
class D :  public B,  public C {};
int main() {
      D* d = new D();
      std::cout << d->a;
      return 0;
}
```

i. This code segmented is rejected by the C++ compiler. Explain the reason it is rejected.

ii. Solve the problem you noticed in (i) by changing just the class signatures, while retaining the classes from the inheritance declarations.

12. If a class Z is derived from class Y, which in turn is derived from class X, all through public inheritance, what type of data can a class Z member function access?

13. What is the range of signed integer type variable in C++?

14. Assuming ^ is a bitwise XOR operator, and $a = 6$, $b = 3$, compute $a \wedge b$

15. If an array is declared as *int* a[4] = {4, 0, 2, 3}, then what values are assigned to a[0] & a[4]?

16. Consider the following four statements:

(a) `i = 30; i++;`
(b) `for (i = 0; i<30; i++) { }`
(c) `a = i++;`
(d) `while (i++ = 30) cout << i;`

Which statement gets affected when `i++` is changed to `++i`?

17. Name an operator in C++ that cannot be overloaded.

18. What will the statement "`for (; ;)`" cause when run in C++?

19. What is the output of the following code segment?

```
char *grt;
grt = "hello";
cout << *grt;
```

20. What is the output of given code fragment?

```
int g=1, i=2;
while(++i<5)
g*=i;
cout<<g;
```