Student Name: - …………………………….................   **ID: -** ……………………………

Question 1: mark the following statements as true or false.   **5 Points**

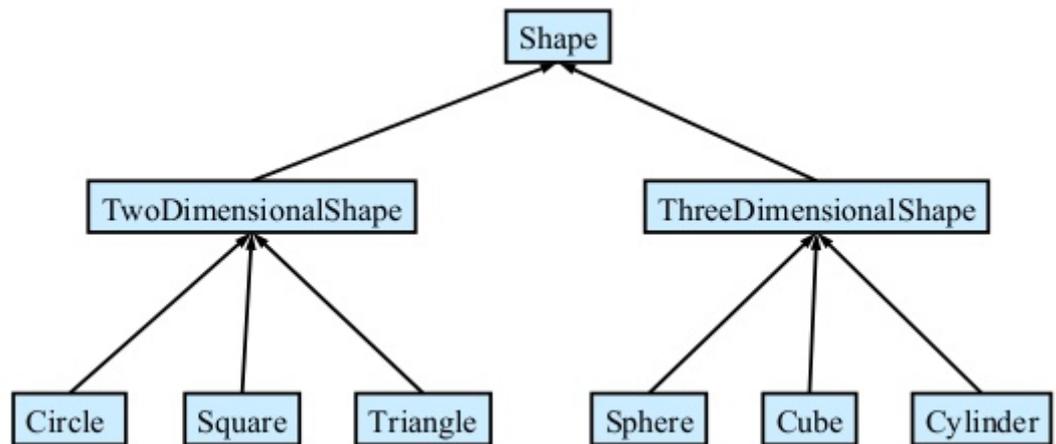|	
Copy constructor and assignment operator = are the same.	
Abstract class is the class that all its methods are pure virtual methods	
Friend function cannot access private data members of the class but can access the protected and public members	
To override operator << we can use either friend or member function.	
Template can create a general code to be used with different data types.	

Question 2 : Given the following class convert it with its methods to template format   3 Points

```
class  Test
{
public:
  Test(int,int);
  int Get_x();
  int Get_y();
  void Set(int,int);
private:
  int x,y;
};
Test::Test(int a,int b)
{
  x=a;
  y=b;
}
int Get_x()
{
        return x;
}
int Get_y()
{
        return y;
}
void Test::Set(int a,int b)
{
  x=a;
  y=b;
}
```

Questing 2: Given the following hierarchy of class   **6 Points**

Define the classes in the hierarchy above using the appropriate data member and methods as the following.
- a. Classes **shape , TowDimensionalShape** and **ThreeDimensionalShape** are abstract classes
- b. **Shape** class should define **print** method.
- c. **TowDimensionalShape** should define **area** method
- d. **ThreeDimensionalShape** should define **volume** and **surface_area** methods

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Question 4: Given the following class classA perform the following: **6 Points**
1. override operator << so you can output the value of x and y respectively
2. override the operator += where object a +=b is a=a+b;
3. override the operator == which will return Boolean value as a friend function
4. override the operator != which will return a Boolean value as a member method.

```
class classA
{
     public:
      void print() const;
     classA(int a,int b){x=a;y=b;}
private:
     int x;
     int y;
};
```

Good Luck

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