Philadelphia University **Faculty of Engineering** **Department of Computer Engineering**		**Date:- 31/03/2016** **Allowed time:- 50 Minutes**
	Object Oriented Programming (630221) **First Exam**	

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

Question 1: Mark the following statements as true or false.   5 points
1. A function cannot return a value of type struct.

2. A member of a struct can be another struct.

3. An array can be a member of a class.

4. The member functions of a class must be public.

5. A class can have more than one constructor.

Question 2: Given the following definition of structures: 5 points

```
struct name            stuct date            struct address
{ string fname;        {  int Day;           { int Num;
   string Lname;            int Mounth;          string street;
};                          int Year;           string Town;
                       };                     };
```

1. Define a structure type " Employee" which will contain Number, name, address, Birth date, hiring date and salary (use the appropriate data type for each variable).
2. Define a pointer of type Employee then use it allocates a dynamic array that contain a number of elements entered by the user.
3. Write a function that inputs the information contained in the struct Employee in a single Employee element then use this function to initialize the array declared in the previous question.

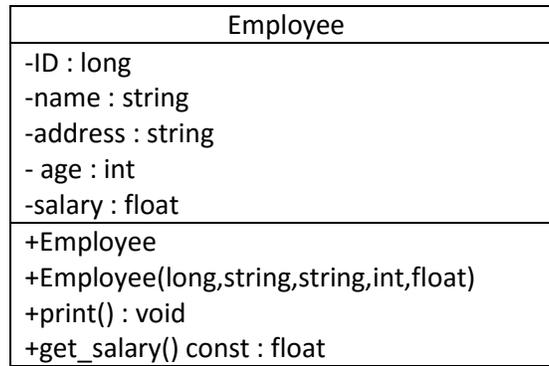*Question 3*: Consider the definition of the following class: 4 points

```
class testClass
{
    public:
      int sum();
          //Returns the sum of the private member variables
      void print() const;
          //Prints the values of the private member variables
      testClass();
          //Initializes the private member variables to 0
      testClass(int a, int b);
          //initializes the private member variables as  x = a and  y = b
    private:
      int x;
      int y;
};
```

Write the definitions of the member methods as described in the definition of the class testClass.

Question 4: Given the following UML diagram for a class Employee   4 points

Employee
-ID : long
-name : string
-address : string
- age : int
-salary : float
+Employee
+Employee(long,string,string,int,float)
+print() : void
+get_salary() const : float

Write a definition for class Employee and all member methods of the class.

Question 5:Given the following code   2 points

```cpp
#include<iostream>
using namespace std;
class test
{
public:
        static int get_cnt();
        test(int);
        void display();
private:
        static int cnt;
        int value;
};
int test::get_cnt()
{
        return cnt;
}
test::test(int a)
{
        value=a;
        cnt++;
}
void test::display()
{
        cout<<"value="<<value<<endl;
}

int main()
{




}
```
1. Write a C++ statement that initializes the static variable count to 3.
2. Write a cout statement that display the static value cnt.

Good Luck

Eng. Sultan M. Al-Rushdan