(1) [12 points]
True or False Questions.
Suppose we have the following inheritance specified in a library file.

```
class A { /* public, protected, and private data and functions*/}
class B : protected A { /* public, protected, and private data and functions*/}
class C : private B { /* public, protected, and private data and functions*/}
```

(a) **True or False** A base class is type-compatible with a derived class.
(b) **True or False** A derived class is type-compatible with a base class when protected inheritance is used.
(c) **True or False** When argument objects are passed to a function by value, a copy constructor is called.
(d) **True or False** When public inheritance is used, only public functions of the derived class, but none from the base class are available to client classes.
(e) **True or False** Class C may access all the protected and public data and functions of Class A and Class B.
(f) **True or False** All clients of class B can only access the public data and functions of class B only and none of class A.

(2) [12 points]
Multiple Choice Questions.

```
// class SampleClass defined in SampleClass.h
SampleClass A; /*1*/
SampleClass B = A; /*2*/
B = A; /*3*/
```

(a) In the line above labeled /*2*/ what function is called? Select one.
  (a) Copy constructor
  (b) Assignment operator
  (c) Default constructor
(b) In the line above labeled /*3*/ what function is called? Select one.
  (a) Copy constructor
  (b) Assignment operator
  (c) Default constructor
(c) Which of the following prototypes demonstrates best practices for writing a copy constructor for the ClassA? Choose the best answer
  (a) ClassA(ClassA& copy);
  (b) ClassA(const ClassA& copy);
  (c) ClassA(const ClassA copy);
(d) ClassB dynamically allocates an array of integers in its constructor. In addition to a default constructor, what are the smallest set of functions that ClassB should implement to avoid memory leaks?
  (a) ClassB should implement a destructor.
  (b) ClassB should implement an assignment operator and destructor.
  (c) ClassB should implement a copy constructor, assignment operator, and destructor.
(e) In the class LinkedList a student has placed the following prototype for overloading the insertion operator:
  `friend ostream& operator<< (ostream& o, const LinkedList &ll);`
  Select all statements that are true about this prototype
  (a) The function will not be able to access private data and functions of the Linked List class.
  (b) The function may change the LinkedList passed a parameter to print.
  (c) The ostream may be modified for the insertion.
  (d) Chaining insertion calls will be possible. (Chaining example: cout << list1 << list2;)
(f) Private data of a base class may be initialized in the following ways: (Circle all that apply)
  (a) By calling the constructor of the base class within the constructor of the derived class
  (b) By calling the constructor of the base class within the initialization list of the constructor of the derived class
  (c) By setting the data directly within the constructor of the derived class since the derived class has a copy of it also.