Name:

**Part 1 [Points 5]**

1. Write the outputs of the following code (6)
   ```
   int i;
   for ( i= 2; i < 20; i = i + i  ){
       cout << i << endl;
       i = i + 2;
   }
   ```
   **OUTPUT:**
   
   2
   8

2. Given the class definition
   ```
   class CreateDestroy {
   public:
       CreateDestroy() { cout << "constructor called, "; }
       ~CreateDestroy(){ cout << "destructor called, "; }
   };
   ```
   Write the output of the following program:
   ```
   int main()
   {
       for (int i = 1; i <= 2; i++)
           CreateDestroy c2;
       return 0;
   }
   ```
   **OUTPUT:**
   constructor called,
destructor called,
constructor called,
destructor called

**Part 2 [Points 10]**

1. An identifier’s storage class
   (a) determines the period during which that identifier exists in memory
   (b) determines whether an identifier is known only in the current source file or in any source file with proper declarations
   (c) determines where the identifier can be referenced in a program
   (d) all of the above

2. Which of the following is not true of `static` local variables?
   (a) they are accessible outside of the function in which they are defined
   (b) they retain their values when the function is exited
   (c) they are initialized to zero if not explicitly initialized by the programmer
   (d) they can be of type `int`

3. A reference parameter
   (a) is an alias for its corresponding argument
   (b) is declared by following the parameter’s type in the function prototype by an ampersand (&)
   (c) cannot be modified
   (d) both (a) and (b)
4. Given the following function template

```cpp
template < class T >
T whatAmI( T value1, T value2 )
{
    if ( value1 > value2 )
        return value2;
    else
        return value1;
}
```

what would be returned by the following two function calls?
whatAmI( 2, 5 );
whatAmI( 2.3, 5.2 );
(a) 5, a type-mismatch error
(b) 5, 5.2
(c) 2, 2.3
(d) two error messages

5. To prevent modification of array values in a function
(a) the array must be declared `static` in the function
(b) the array parameter can be preceded by the `const` qualifier
(c) a copy of the array must be made inside the function
(d) the array must be passed call-by-reference

6. Non-static member variables declared `private`
(a) can never be accessed directly or indirectly by the client.
(b) can never be modified directly or indirectly by the client.
(c) can be accessed and/or modified by any object of a different class.
(d) can be accessed and/or modified by public member functions and by friends of the class.

7. Returning references to non-`const` private data
(a) allows private functions to be modified.
(b) is only dangerous if the binary scope resolution operator (::) is used in the function prototype
(c) allows private member variables to be modified, thus “breaking encapsulation.”
(d) results in a compiler error.

8. A default constructor
(a) is a constructor with all default arguments
(b) is the constructor generated by the compiler when one is not provided by the programmer
(c) does not perform any initialization
(d) both (b) and (c)

9. If the line `friend class A;` appears in `class B`, and `friend class B;` appears in `class C` then
(a) `class A` is a friend of `class C`.
(b) `class C` can call `class A’s private` member functions.
(c) `class A` can access `private` variables of `class B`
(d) `class B` can access `class A’s private` variables.

10. If the functions `a()`, `b()` and `c()` all return references to an object `Test` (using the `this` pointer) and function `d()` is declared `void`, which of the following statements has correct syntax?
(a) `a() . b() . Test;`
(b) `Test . d() . c();`
(c) `Test . a() . Test . d();`
(d) `Test . a() . b() . d();`