**CMSC 3233**

**Data Structures**

**Assignment 4 – Problems**

R-4.9. f(n)=5(n+1)= O(n)

R-4.10.f(n)=5(n/2+1)=O(n)

R-4.11. f(n)=5+5n2+3n=O(n2)

R-4.12.f(n)=6+7n=O(n)

R-4.13.f(n)=4+3n+6n2+54n3=O(n3)

C-4.36. Algorithm

* Input: Array A
* Output: Array B of 10 largest ints

- A1=insertionSort(A) //A1 is a sorted copy of array A

-

j=0;

f**or**(**int** i=A.length-1; i >= A.length-10; i--) {

B[j]=A1[i];

j++;

}

**return** B;

Running time= 2106532 ms

C-4.55

Let’s suppose we have 4 bottles.

So,

Log24=2 testers.

In order to determine which bottle contains the deadly poison.

-Each tester drinks a bottle (provided they are able to differentiate the bottles).

-Then, they will share one bottle.

-And keep one bottle.

Outcome: If one dies, then his unique bottle was poisoned. If both die, then the shared bottle had poison in it. Otherwise, the untested bottle has poison.

P-4.61.

In Excel sheets.