

Class Test 1: CSE 207 – Algorithm, Fall 2020

Total Marks: 20, Time: 30 minutes

Question 1:

[8]

Given the algorithm below, find the **Time Complexity** using the **RAM** model. Show the **detail steps** of your calculation.

```
1 Algo1(int n)
2   inc = (last 2 digits of your id % 3) + 1
3   for(i=1; i<=n; i+=inc)
4       for(j=1; j<=n; j=j*inc)
5           printf(i*j)
```

Question 2:

[4+4]

Given the algorithm below, provide example value of **a**, **b** and **key** for both **Best case** and **Worst-case** scenario. Assume the size of **a** and **b** are **n** where $n = (\text{last 2 digits of your id \% 3}) + 6$.

```
Algo2(a[], b[], key)
    // a[] and b[] are of size n
    for(i → 1 to n)
        if(a[i] * b[n-i] == key)
            return true

    return false
```

Question 3:

[4]

Show that $T(n) = 3n^2 - 2n + 3 = \Theta(n^2)$. Find the value of c_1 , c_2 and n_0 .