# ASSIGNMENT – 1 CSE-211 (Algorithms)

1. Prove that: $n^2-2n+5 = \Theta(n^2)$, $n^3-3n = O(n^3)$

2. Assume our data set is the size of n and we can divide it to m blocks so that $n/m=2^r$, where r > 0. Each block, m is sorted and for each value of r, it maintains the pivot property(larger values on right and smaller values on left). Sort the data in ascending order in O(n) time.

Test case: n = 16, m = 2, r = 4

1 2 | 3 4 || 7 8 | 5 6 ||| 13 15 | 17 19 || 30 35 | 23 25

3. Write the BUBBLR-SORT algorithm for descending order and find the time complexity.

4. Write the MERGER-SORT algorithm for descending order and find the time complexity(without sentinel).

5. Write the QUICK-SORT algorithm for descending order and find the time complexity.

6. Make a MIN-HEAPIFY algorithm, and using that algorithm write a algorithm for descending order sorting algorithm. Find the time complexity.