**ITS202: Algorithms and Data Structures**

**Class Test – 01**

Date: 08/10/2020 **Total marks: 20 Marks**

Time: 1 hour

**Section 1(Short Answer Questions):** **10 Marks**

1. Find the number of exchanges/swaps and the number of comparisons done while sorting the characters in the String "EXAMQUESTION" using selection sort. (1 X 4 = 4 marks)
2. Write down the Best-Case and Worst-Case complexity of Selection Sort, Insertion Sort, Bubble Sort algorithms. (1 X 3 = 3 marks)
3. Give the time complexity best case and worst case in Big Oh and Omega notation for the following code snippets. (4 \* 0.75 = 3 Marks)

for (int i = 1; i <=m; i ++) {

// some O(1) expressions

}

int fun(int n) {

If(n==0)

return 1;

else

return n + fun(n-1);

}

Assume the function fun is invoked.

for (int i = 1; i <=n; i = i \* 2) {

// some O(1) expressions

}

for (int i = n; i > 1; i = fun(i)) {

// some O(1) expressions

}

//Here fun is sqrt or cuberoot or any other constant root

**Section 2 (Long Answer Question)** **10 Marks**

1. Write down the algorithms and diagram with explanation of four operations in LinkedList data structure.