Class Test 4: CSE 207 – Algorithm, Fall 2020
Total Marks: 20, Time: 30 minutes

Q1. Which representation is preferable for storing a sparse graph; adjacency matrix or adjacency list? Why? With your preferred representation, how long will it take to compute the out-degree of all vertices of a directed graph? Write down the algorithm to calculate the out degree of all vertices. **8**

Q2. Generate a graph with **n** vertices and **m** edges where n=8 + (id%2) and m=12 + (id%3). Mark the nodes from 0 to n-1. Generate the graph in such a way so that your graph contains at least 2 cycles. Now put **random weights** to the **edges** and answer one of the following. **12**

    1) Simulate **MST** using **Kruskal's** algorithms if **your id is odd**. Start from id%9 as your starting vertex.

    2) Simulate **SSSP** (Single Source Shortest path) using **Dijkstra's** algorithm **if your id is even**. Take (id%8)th vertex as the source vertex.