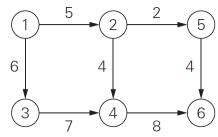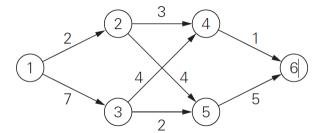1. (20 points) Consider the problem of scheduling n jobs of known durations $t_1, t_2, \ldots, t_n$ for execution by a single processor. The jobs can be executed in any order, one job at a time. You want to find a schedule that minimizes the total time spent by all the jobs in the system. (The time spent by one job in the system is the sum of the time spent by this job in waiting plus the time spent on its execution.) Design a greedy algorithm for this problem. Does the greedy algorithm always yield an optimal solution?

2. Apply the shortest-augmenting path algorithm to find a maximum flow and a minimum cut in the following networks.

a.

b.