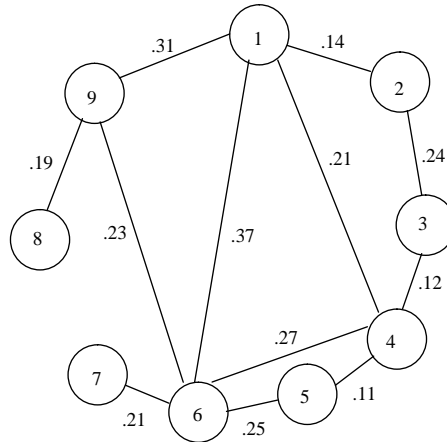# CSE 5311: Homework 2

1. Find the MST of the following graph using the method based on Warshall's algorithm:
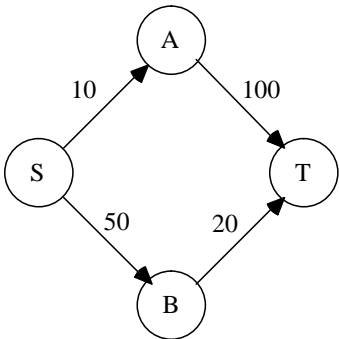

2. 24.2-4

3. 24.2-5

4. 27.2-2, also solve using preflow-push

5. Determine the lattice of solutions for the following stable marriage problem, given the following precedence lists ordered from most favored to least favored:

Men				Women			
1	2	3	4	1	2	3	4
1	2	3	4	4	3	2	1
2	1	4	3	3	4	1	2
3	4	1	2	2	1	4	3
4	3	2	1	1	2	3	4

6. 23-1

7. Find a maximum flow in the following network using the preflow-push algorithm.

8. Give the Knuth-Morris-Pratt fail links (both methods) for the search pattern abracadabra.

9. Suppose that matrix multiplication is implemented in a recursive, decomposition fashion like Strassen's method. However, instead of using his equations we use the everyday ones, i.e. $c_{ij} = a_{i1} * b_{1j} + a_{i2} * b_{2j}$
What is the asymptotic complexity, based on the number of scalar multiplies and additions/subtractions?