Name: _Solutions_____
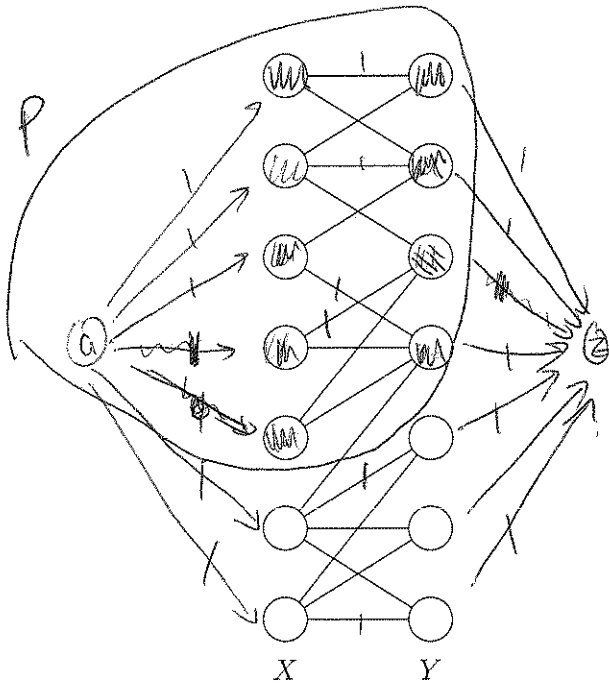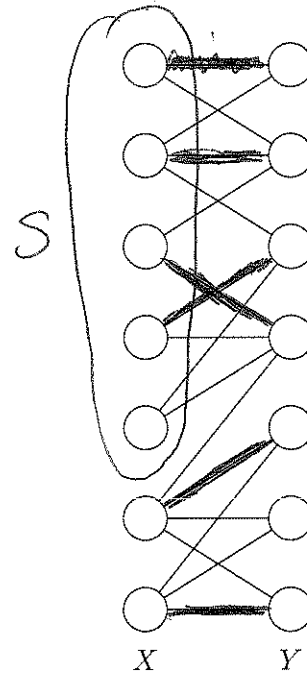
Directions: Show all work. No credit for answers without work.

1. **[5 points]** Find a maximum matching in the following bipartite graph and a set $S \subseteq X$ whose deficiency proves the matching is maximal.
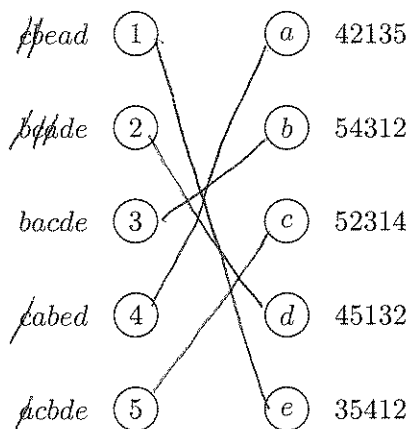

All unit capacities

Matching: 6

$$\frac{\delta(S) = 1}{7 \checkmark}$$

$\delta(S) = |S| - |R(S)| = 5 - 4 = 1$

2. **[5 points]** Given a set $\{1, 2, 3, 4, 5\}$ of men and a set $\{a, b, c, d, e\}$ of women with the following preference lists, find a stable matching.