Solutions to Chapter 8 Exercises

8.10 1. 2, no 4, yes

2. Go round the cycle, including every second edge in the matching. A Hamiltonian graph has a cycle that includes every vertex; go round the cycle, including every second edge in the matching.

8.12 Yes: e.g. A-build decking, B-remove weeds, C-paving, D-dig pond

8.19 $\{M_2, W_1\}, \{M_3, W_2\}, \{M_1, W_3\}$

8.18 1. Each man is matched with his top ranking woman and thus will not swap.

2. $\{M_1, W_1\}, \{M_2, W_2\}, \{M_3, W_3\}$ unstable pair: $\{M_2, W_2\}$ and $\{M_3, W_3\}$ (for example); $\{M_3, W_1\}, \{M_2, W_2\}, \{M_1, W_3\}$ unstable pair: $\{M_2, W_2\}$ and $\{M_1, W_3\}$ (for example); $\{M_2, W_1\}, \{M_3, W_2\}, \{M_1, W_3\}$ unstable pair: $\{M_2, W_1\}, \{M_1, W_3\}$ (for example)

8.19 1. $\{M_1, W_1\}, \{M_2, W_2\}, \{M_3, W_3\}, \{M_4, W_4\}$

2. $\{M_1, W_3\}, \{M_2, W_2\}, \{M_3, W_1\}, \{M_4, W_4\}$

8.24

1	0	2	2	4	
1	0	0	3	**0**	
0	1	2	4	5	zeros can be covered by rows 2,3,4 and column 2
2	5	0	**0**	2	
3	**0**	2	3	1	

8.26 $(W_1, j_5), (W_2, j_1), (W_3, j_4), (W_4, j_2), (W_5, j_3)$

8.28 $(W_1, j_4), (W_2, j_3), (W_3, j_1)$

8.30 smallest value= 3