Microeconomics II (PhD)
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Part B

5. Consider the following marriage market with four men and four women. Preferences are strict and given by

$$\begin{array}{lllll} m_1: & w_1, & w_2, & w_3, & w_4 \\ m_2: & w_2, & w_1, & w_4, & w_3 \\ m_3: & w_3, & w_4, & w_1, & w_2 \\ m_4: & w_4, & w_3, & w_2, & w_1 \end{array} \qquad \begin{array}{lllll} w_1: & m_4, & m_3, & m_2, & m_1 \\ w_2: & m_3, & m_4, & m_1, & m_2 \\ w_3: & m_2, & m_1, & m_4, & m_3 \\ w_4: & m_2, & m_3. & & \end{array}$$

In the following, you may use without proof that

$$\mu_1 = \begin{array}{cccc} w_1 & w_2 & w_3 & w_4 \\ m_3 & m_1 & m_4 & m_2 \end{array}$$

is a stable matching.

(a) Show that

$$\mu_2 = \begin{array}{cccc} w_1 & w_2 & w_3 & w_4 \\ m_2 & m_4 & m_1 & m_3 \end{array}$$

is a stable matching.

(b) Find the men-optimal stable matching μ_M and the women-optimal stable matching μ_W.

(c) Find two additional stable matchings that are different from μ_1, μ_2, μ_M and μ_W.

6. Consider a marriage market with strict preferences. A mechanism asks the agents to reveal their preferences and chooses the men-optimal stable allocation for the reported preferences. Suppose that (i) men report truthfully and (ii) each woman reports a preference list such that all reports form a Nash equilibrium.

Show: The resulting matching is stable.

7. Show: In a marriage market with strict preferences, the set of people who are single is the same for all stable matchings.