Feb 3 — Stable Matching/Marriage Problem

n men $M = \{m_1, m_2, \ldots, m_n\}$ | $n = 2$
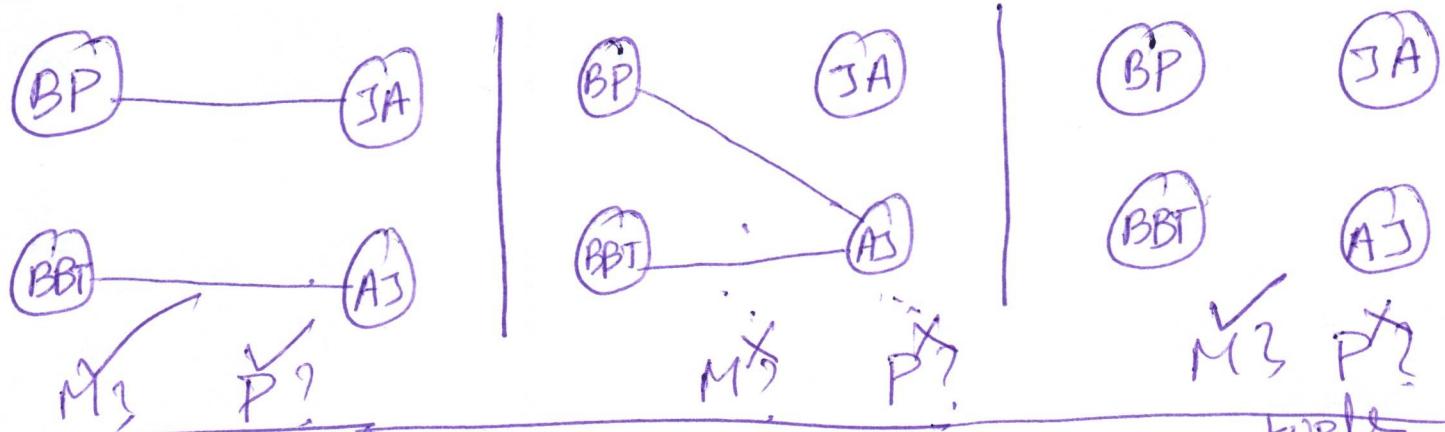
n women $W = \{w_1, w_2, \ldots, w_n\}$ | $M = \{BP, BBT\}$

$W = \{JA, JA\}$

BP —— JA | BP   JA | BP   JA

BBT —— AJ | BBT —— AJ | BBT   AJ

$M?$ $P?$ | $M\checkmark$ $P?$ | $M?$ $P?$

Def (Matching): A subset $S \subseteq \underbrace{M \times W}_{\text{subset}} = \{(m, \overset{\text{tuple}}{w}) \mid m \in M, w \in W\}$

is a matching IF

i) $\underset{\text{for all}}{\forall} m \in M,$ $\underset{\text{there exists}}{\exists}$ at most one $\overset{\leq 1}{w \in W}$, $(m, w) \in S$

ii) $\forall w \in W,$ $\exists$,,   ,,   ,, $m \in M$, $(m, w) \in S$

Def (Perfect Matching)

EXACTLY

$S_1 = \{(BP, JA), (BBT, AJ)\}$ | $S_2 = \{(BP, AJ), (BBT, AJ)\}$

$M?$ $P?$ $M?$ $P\times$

$S_3 = \{\ \}$

$P\times$