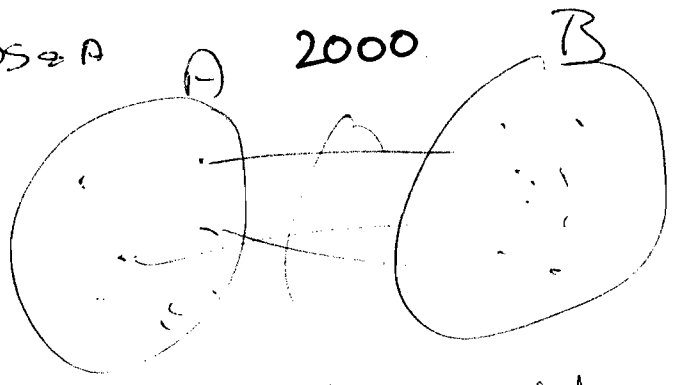
(f) DS & A 2000



$p \leq q$?
MR
$p \geq q$?

$G(V, E)$ all edges between A and B

$E = \{(a,b) \mid a \in A \quad b \in B\}$ and $A \cap B = \emptyset$
$A \cup B = V$

A matching is a subset of the E

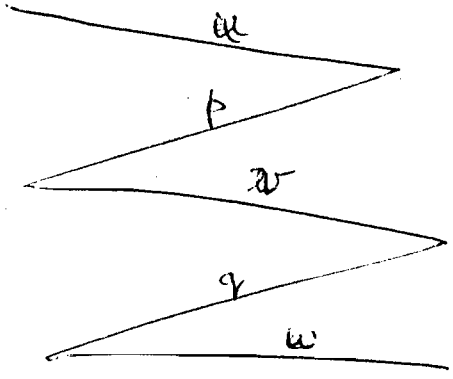
s.t $(a,b) \in M$ and $(c,d) \in M$

$\Rightarrow (a=c \wedge b=d)$

or

$(a \neq c \wedge b \neq d)$

Augmenting path. P u p v q w



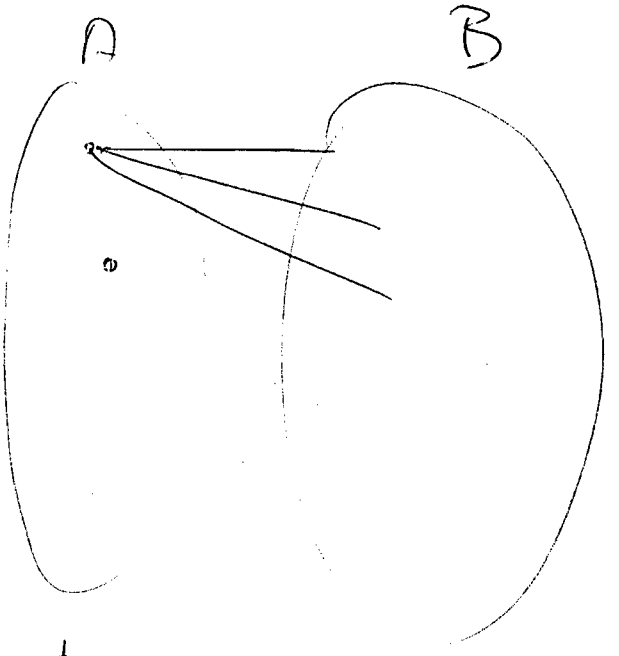
$u \; v \; w \notin M$

$p \; q \in M$

consider $P \oplus M$

This is a matching with more edges than M.

proof book work. (quite easy).



$M = \phi$

① Find an augmenting path rel to M

② if none found return M

③ $M \leftarrow P \oplus M$

Then give details of ①

for each $a \in A$

for each $(a,b) \notin M$

if no $(x,b) \in M$ return with path

now find any path from x

etc

not difficult.

search $< m$ edges to find a matching

runs to do it $< m$ times so $O(m^2)$ usually much fast.