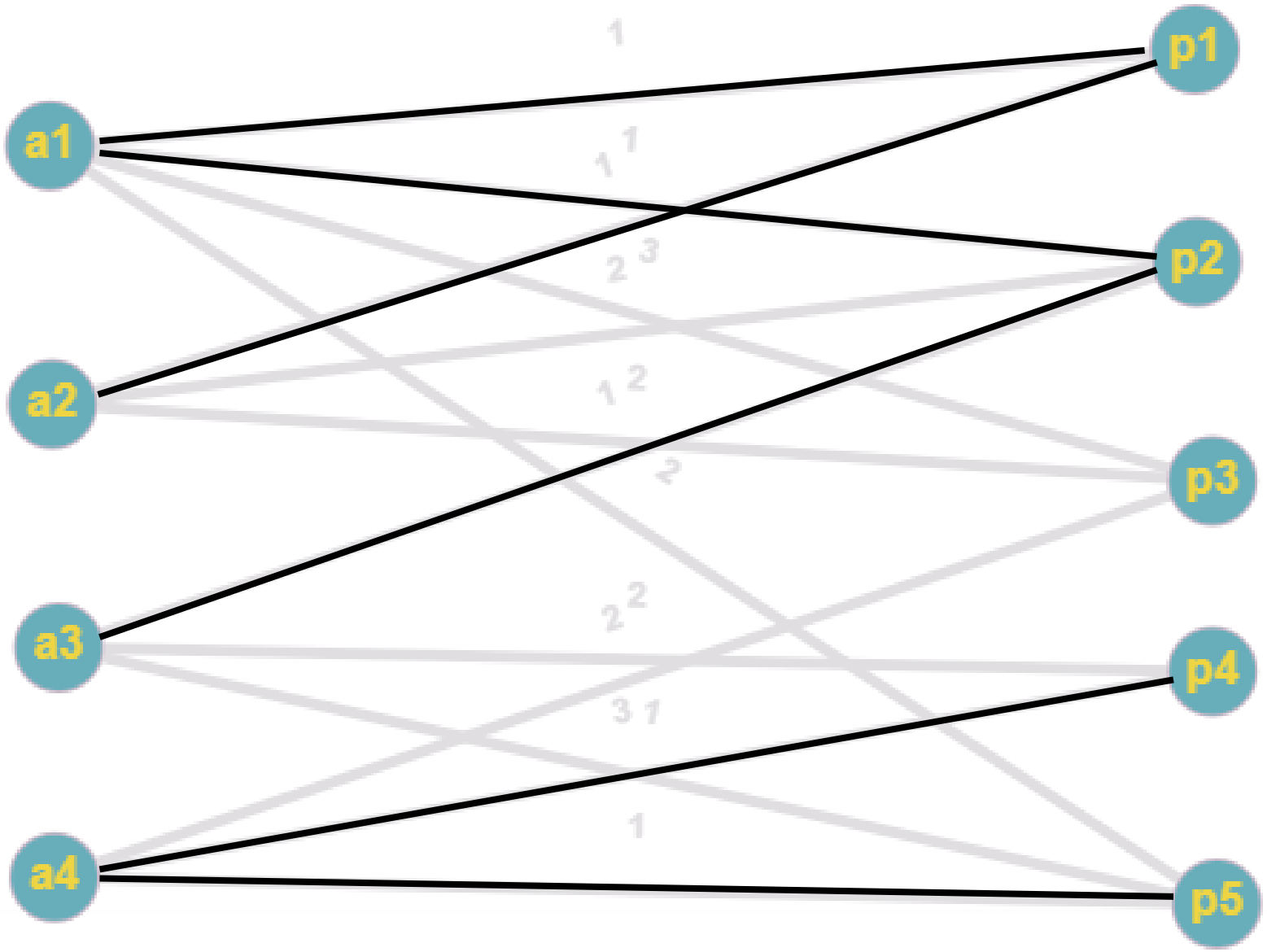
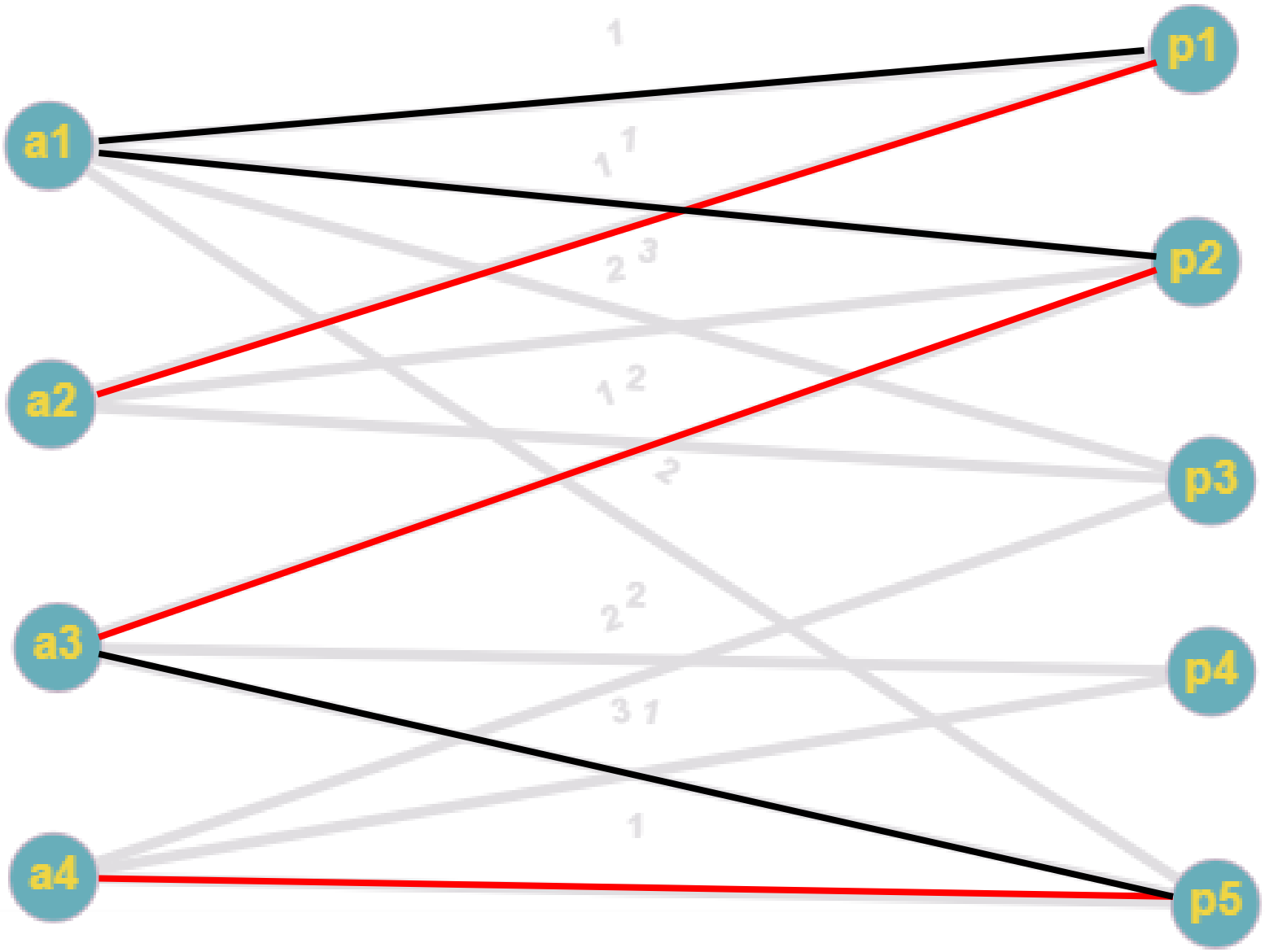
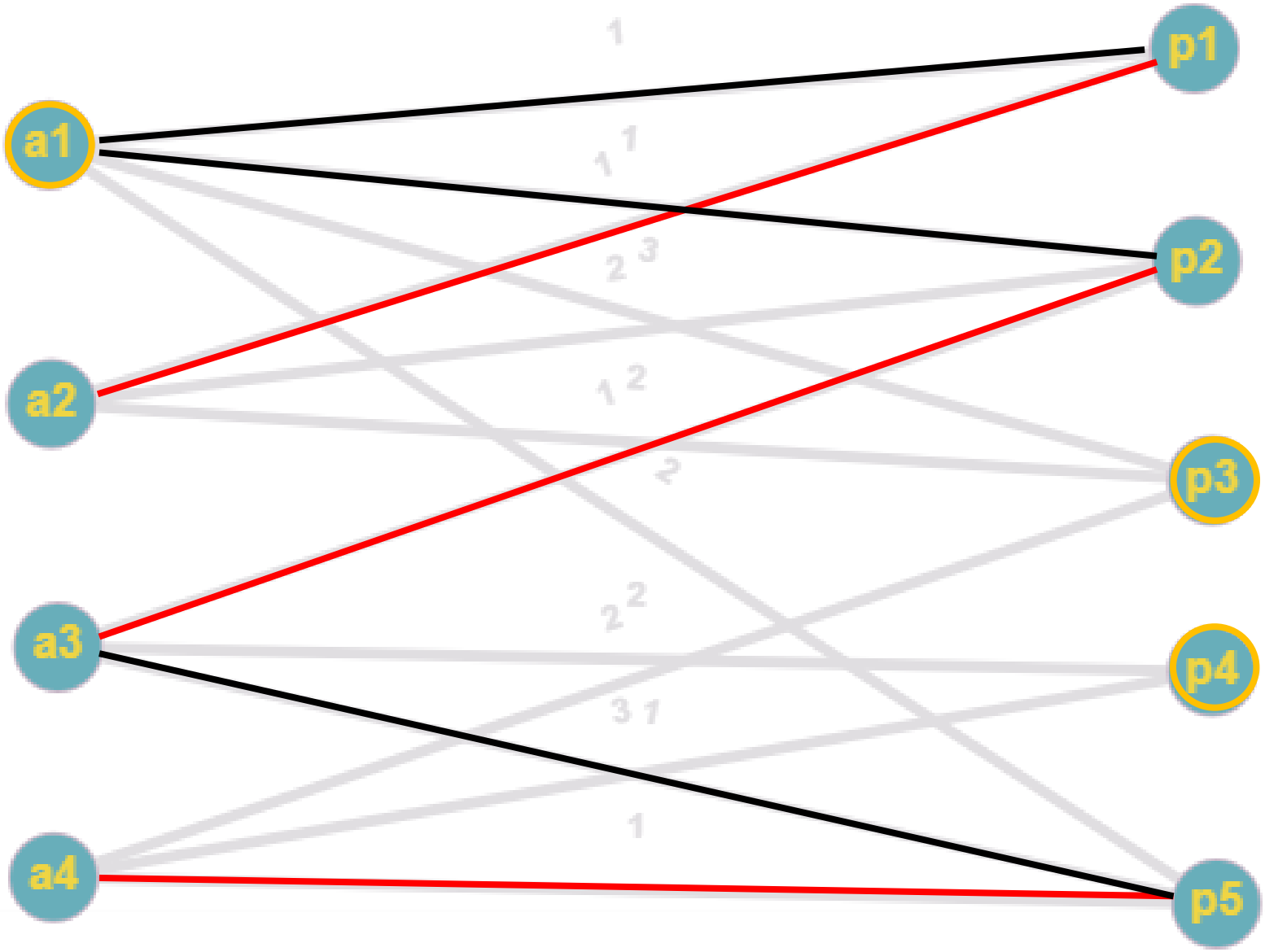
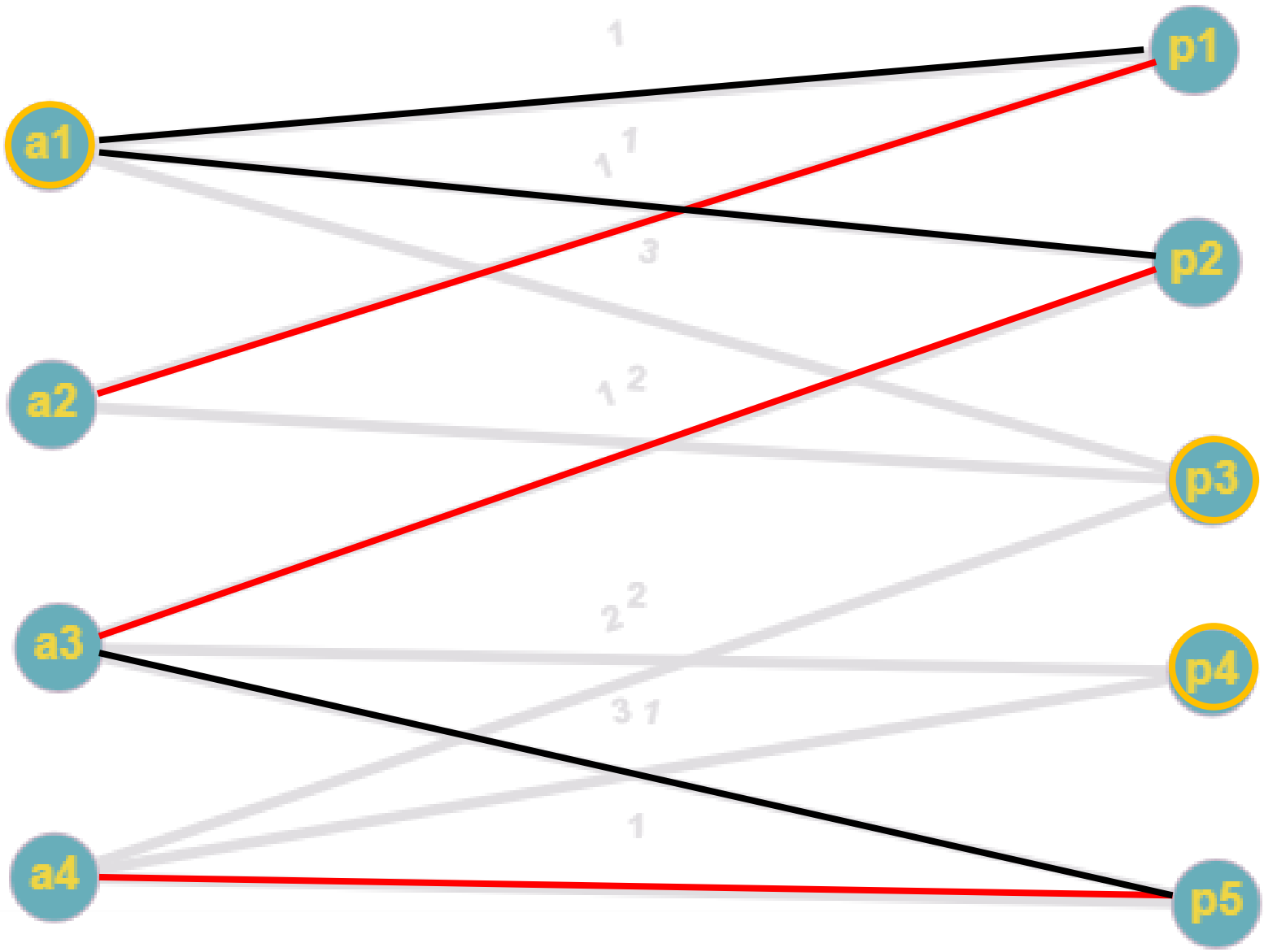

a1
a2
a3
a4
p1
p2
p3
p4
p5
1
1 1
2 3
1 2
2
2 2
3 1
1


a1
a2
a3
a4
p1
p2
p3
p4
p5
1
1 1
2 3
1 2
2
2 2
3 1
1



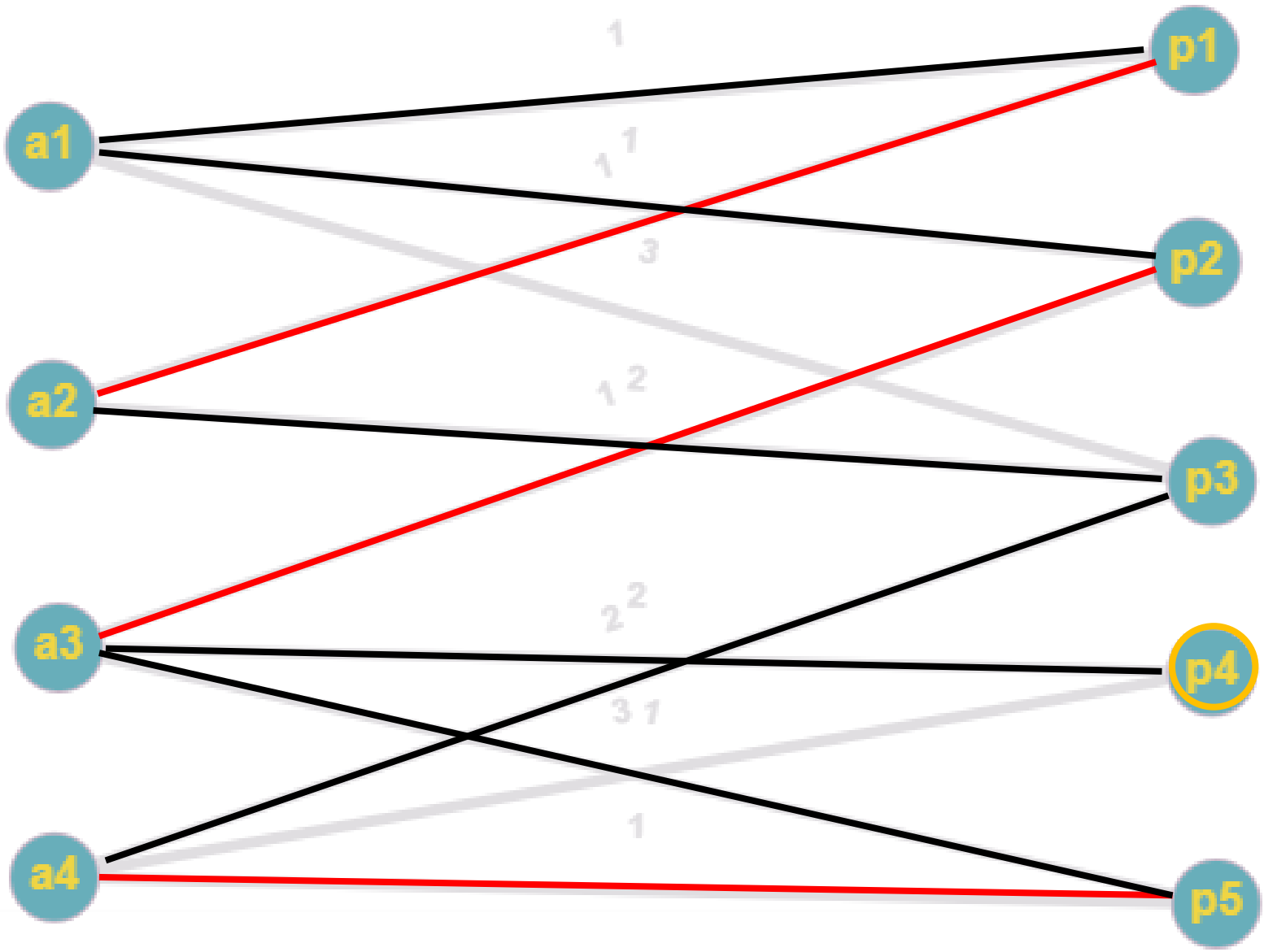
$M_1=\{(a_2,p_1),(a_3,p_2),(a_4,p_5)\}$
Free vertices $=a_1,p_3,p_4$
$EV_1=\{a_1,p_3,p_4,a_2,a_3,a_4\}$
$O_1=\{p_1,p_2,p_5\}$
$U_1=\{\}$

Delete all edges with the rank higher than 1 that incident to nodes that are in O_1 Union U_1. In addition we will delete all the edges from O_1O_1 O_1U_1



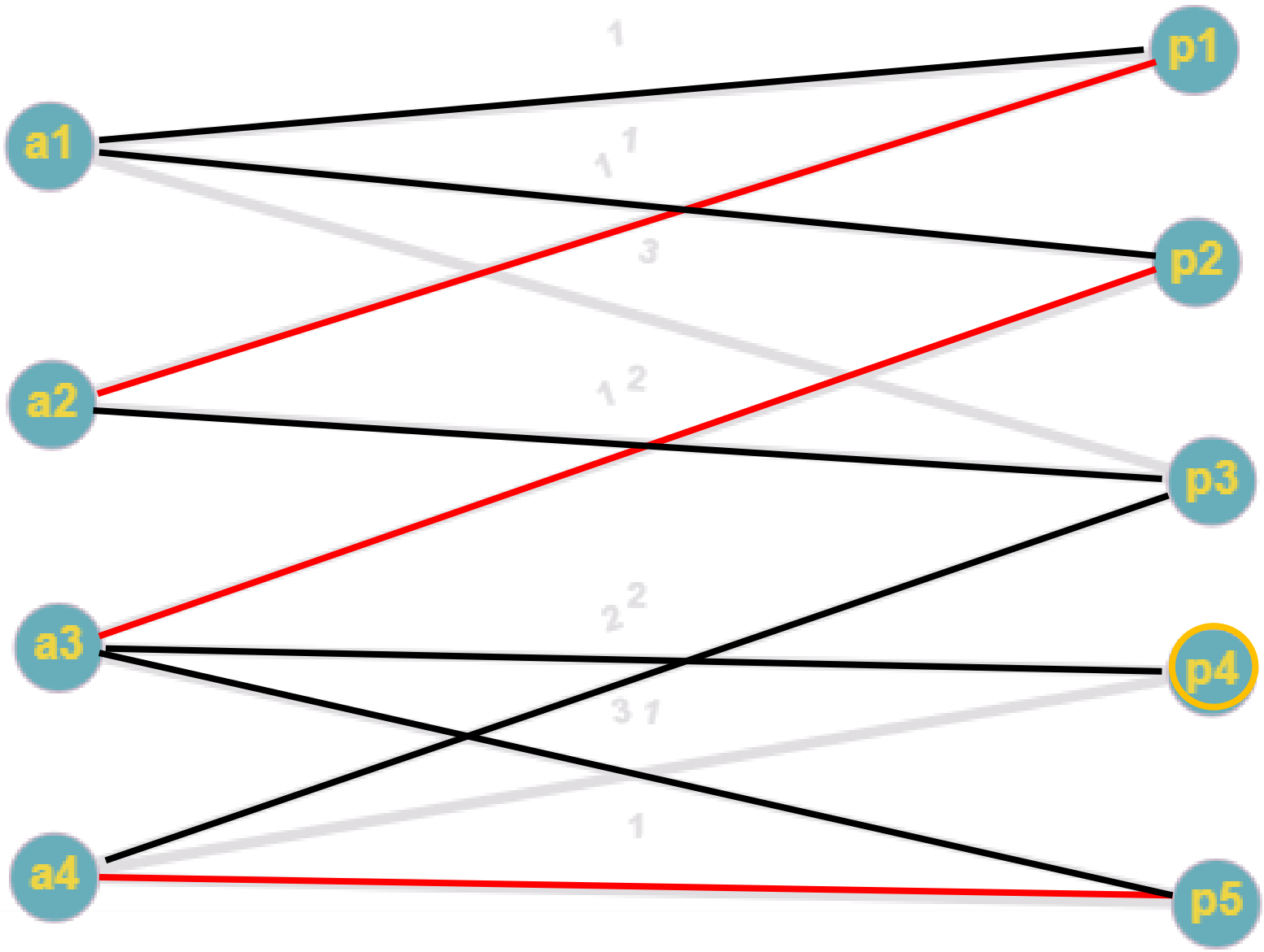
$M_1=\{(a_2,p_1),(a_3,p_2),(a_4,p_5)\}$
Free vertices $=a_1,p_3,p_4$
$EV_1=\{a_1,p_3,p_4,a_2,a_3,a_4\}$
$O_1=\{p_1,p_2,p_5\}$
$U_1=\{\}$

We will add the edges with rank 2 to the graph.



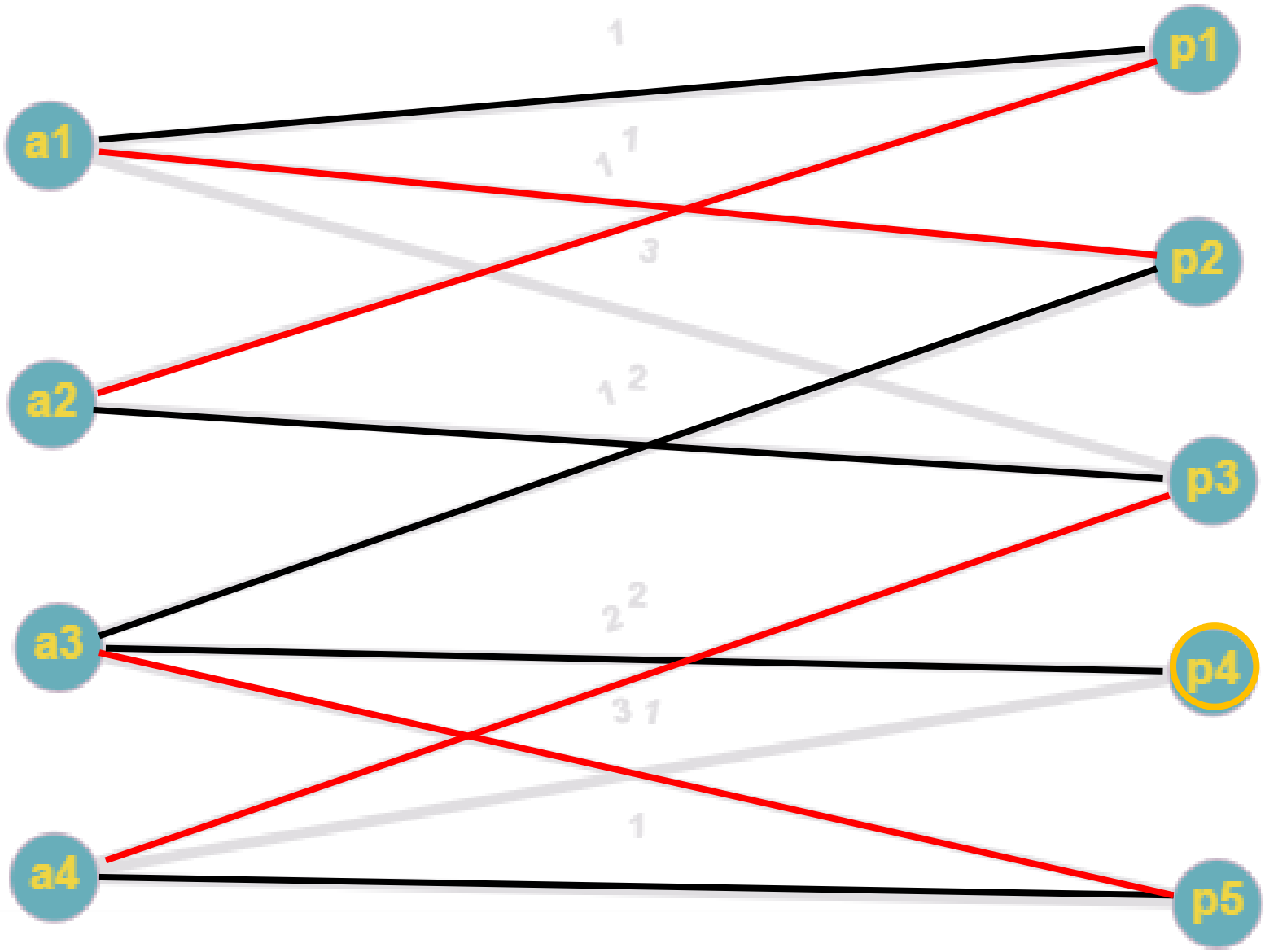
$M_1=\{(a_2,p_1),(a_3,p_2),(a_4,p_5)\}$
Free vertices $=a_1,p_3,p_4$
$EV_1=\{a_1,p_3,p_4,a_2,a_3,a_4\}$
$O_1=\{p_1,p_2,p_5\}$
$U_1=\{\}$

We will look for an augmenting path.



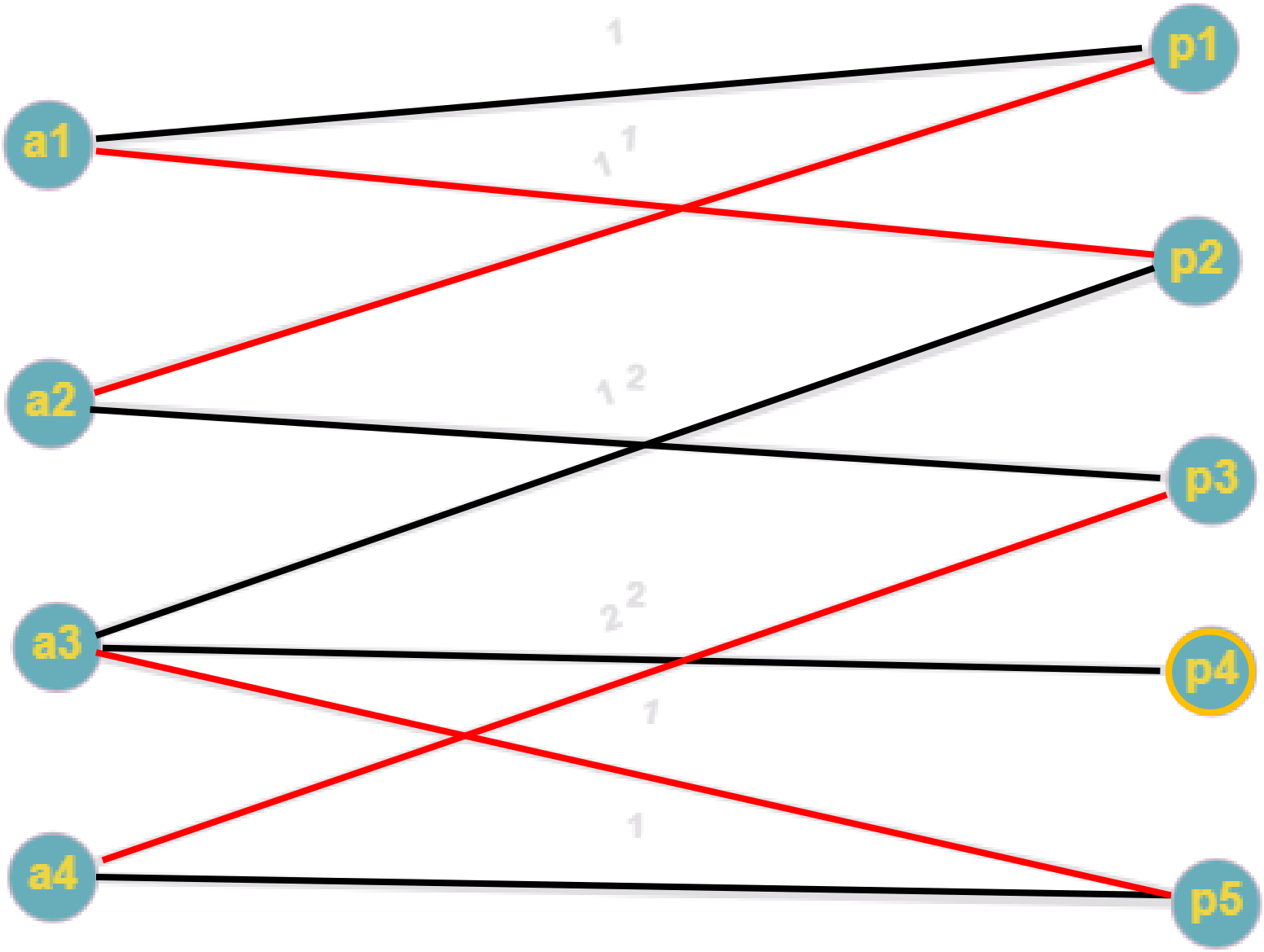
$M_1=\{(a_2,p_1),(a_3,p_2),(a_4,p_5)\}$
Free vertices $=a_1,p_3,p_4$
$EV_1=\{a_1,p_3,p_4,a_2,a_3,a_4\}$
$O_1=\{p_1,p_2,p_5\}$
$U_1=\{\}$

We found a 5 length augmenting path. Now we take the symmetric difference as the new match.



$M_1=\{(a_2,p_1),(a_3,p_2),(a_4,p_5)\}$
Free vertices $=a_1,p_3,p_4$
$EV_1=\{a_1,p_3,p_4,a_2,a_3,a_4\}$
$O_1=\{p1,p2,p5\}$
$U_1=\{\}$

The new matching is:
$M_2=\{(a_1,p_2),(a_2,p_1),(a_3,p_4),(a_4,p_4)\}$



$M_2=\{(a_1,p_2),(a_2,p_1),(a_3,p_4),(a_4,p_4)\}$
Free vertices = p_4
$EV_2=\{p_4,p_5,p_3,p_1,p_2\}$
$O_2=\{a_1,a_2,a_3,a_4\}$
$U_2=\{\}$

There are no additional edges that can be added to the current graph, so there is no way to increase the matching.