1 Full report

1.1 Input data

Input file name:

`UPO.txt`

File contents:

```
#mathmatical symbols used in rate constant names (e.g. k-1) must be escaped with a prece

E, k1; [A], EA/EP
EA/EP, k_-1, E
EA/EP, k2, E*
E*, k_-2, EA/EP
E*, k3; [B], E*B/EQ
E*B/EQ, k_-3, E*
E*B/EQ, k6, E
E, k_-6; [Q], E*B/EQ
E*, k4; [A], E*A/EPR
E*A/EPR, k_-4, E*
E*A/EPR, k7, E
E, k_-7; [P], E*A/EPR
E, k8; [B], EB
EB, k_-8, E

=+: E*B/EQ, k6,
=-: E, k_-6; [Q],

=0: k_-6, k_-7, [P], [Q], k_-2

subsymbols: k_ib, k_ma, k_ma2, k_mb
subs:k8, k_-8/k_ib
subs:k1, (k_-1 + k2)/k_ma
subs:k4, (k_-4+k7)/k_ma2
subs:k3, (k_-3+k6)/k_mb
```

1.2 Parsed reactions

Reactions after parsing:

$$
\begin{array}{lcr}
E & \xrightarrow{k_1[A]} & EA/EP \\
EA/EP & \xrightarrow{k_{-1}} & E \\
EA/EP & \xrightarrow{k_2} & E* \\
E* & \xrightarrow{k_{-2}} & EA/EP \\
E* & \xrightarrow{k_3[B]} & E*B/EQ \\
E*B/EQ & \xrightarrow{k_{-3}} & E* \\
E*B/EQ & \xrightarrow{k_6} & E \\
E & \xrightarrow{k_{-6}[Q]} & E*B/EQ \\
E* & \xrightarrow{k_4[A]} & E*A/EPR \\
E*A/EPR & \xrightarrow{k_{-4}} & E* \\
E*A/EPR & \xrightarrow{k_7} & E \\
E & \xrightarrow{k_{-7}[P]} & E*A/EPR \\
E & \xrightarrow{k_8[B]} & EB \\
EB & \xrightarrow{k_{-8}} & E
\end{array}
$$

1.3 Linear graph matrix

	0	1	2	3	4	5
0		$\frac{k_{-1}}{k_1[A]}$		$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-8}}{k_8[B]}$
1	$\frac{k_{-1}}{k_1[A]}$		$\frac{k_{-2}}{k_2}$			
2		$\frac{k_{-2}}{k_2}$		$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	
3	$\frac{k_{-6}[Q]}{k_6}$		$\frac{k_{-3}}{k_3[B]}$			
4	$\frac{k_{-7}[P]}{k_7}$		$\frac{k_{-4}}{k_4[A]}$			
5	$\frac{k_{-8}}{k_8[B]}$					

1.4 Kinetic matrix

	0	1	2	3	4	5
0		$k_1[A]$		$k_{-6}[Q]$	$k_{-7}[P]$	$k_8[B]$
1	k_{-1}		k_2			
2		k_{-2}		$k_3[B]$	$k_4[A]$	
3	k_6		k_{-3}			
4	k_7		k_{-4}			
5	k_{-8}					

1.5 King-Altman Patterns

	0	1	2	3	4
0	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-8}}{k_8[B]}$
1	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
2	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-8}}{k_8[B]}$
3	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
4	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-8}}{k_8[B]}$
5	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
6	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-8}}{k_8[B]}$
7	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
8	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
9	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-1}}{k_1[A]}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
10	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-6}[Q]}{k_6}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$
11	$\frac{k_{-7}[P]}{k_7}$	$\frac{k_{-2}}{k_2}$	$\frac{k_{-3}}{k_3[B]}$	$\frac{k_{-4}}{k_4[A]}$	$\frac{k_{-8}}{k_8[B]}$

1.6 Directed Patterns

	0	1	2	3	4
0	$k_8[B]$	k_{-1}	k_6	k_7	k_{-2}
1	$k_8[B]$	k_{-1}	k_6	k_{-2}	k_{-4}
2	$k_8[B]$	k_{-1}	k_7	k_{-2}	k_{-3}
3	$k_8[B]$	k_{-1}	k_{-2}	k_{-3}	k_{-4}
4	$k_8[B]$	k_6	k_{-1}	k_7	$k_3[B]$
5	$k_8[B]$	k_6	k_{-1}	$k_3[B]$	k_{-4}
6	$k_8[B]$	k_6	k_7	$k_3[B]$	k_2
7	$k_8[B]$	k_6	$k_3[B]$	k_2	k_{-4}
8	$k_8[B]$	k_7	k_{-1}	k_6	$k_4[A]$
9	$k_8[B]$	k_7	k_{-1}	$k_4[A]$	k_{-3}
10	$k_8[B]$	k_7	k_6	$k_4[A]$	k_2
11	$k_8[B]$	k_7	$k_4[A]$	k_2	k_{-3}