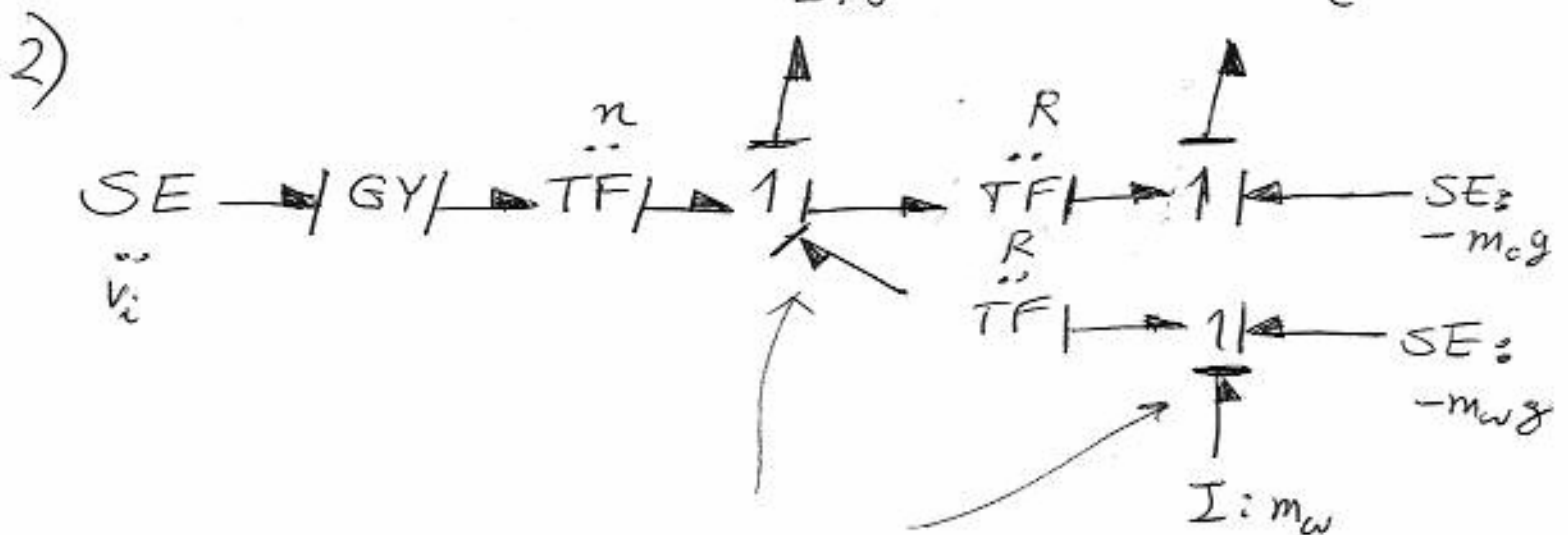
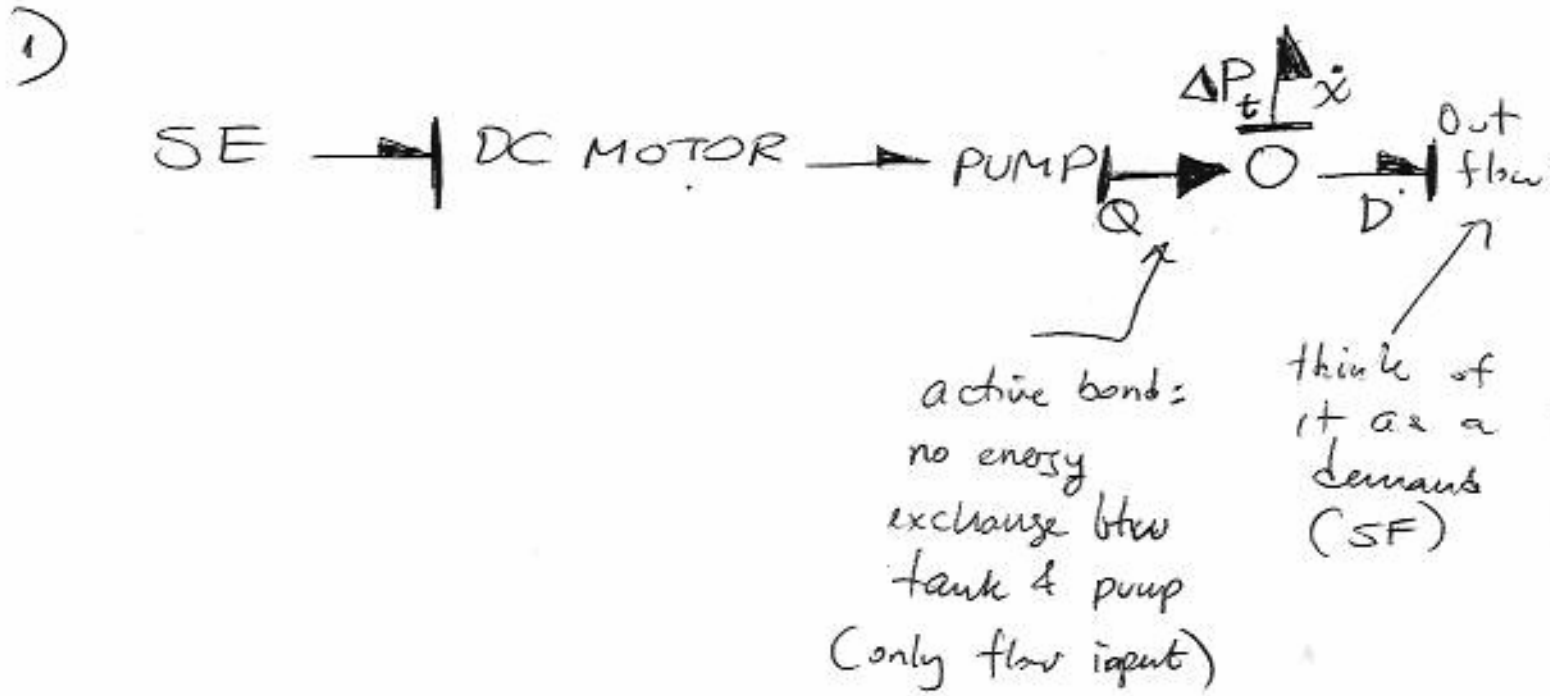
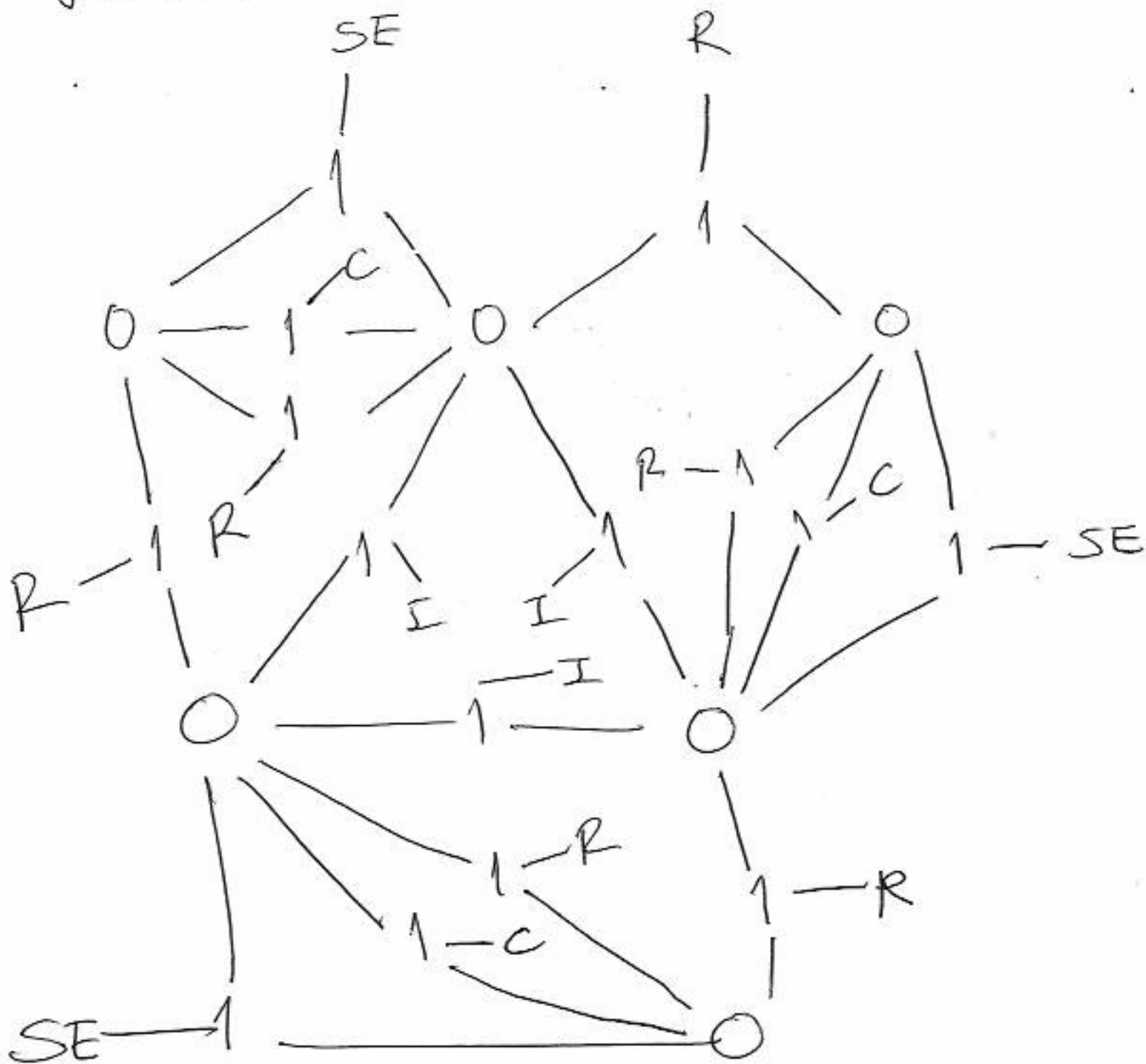


MCE 503 1st MIDTERM SOLUTION

SPRING 2009

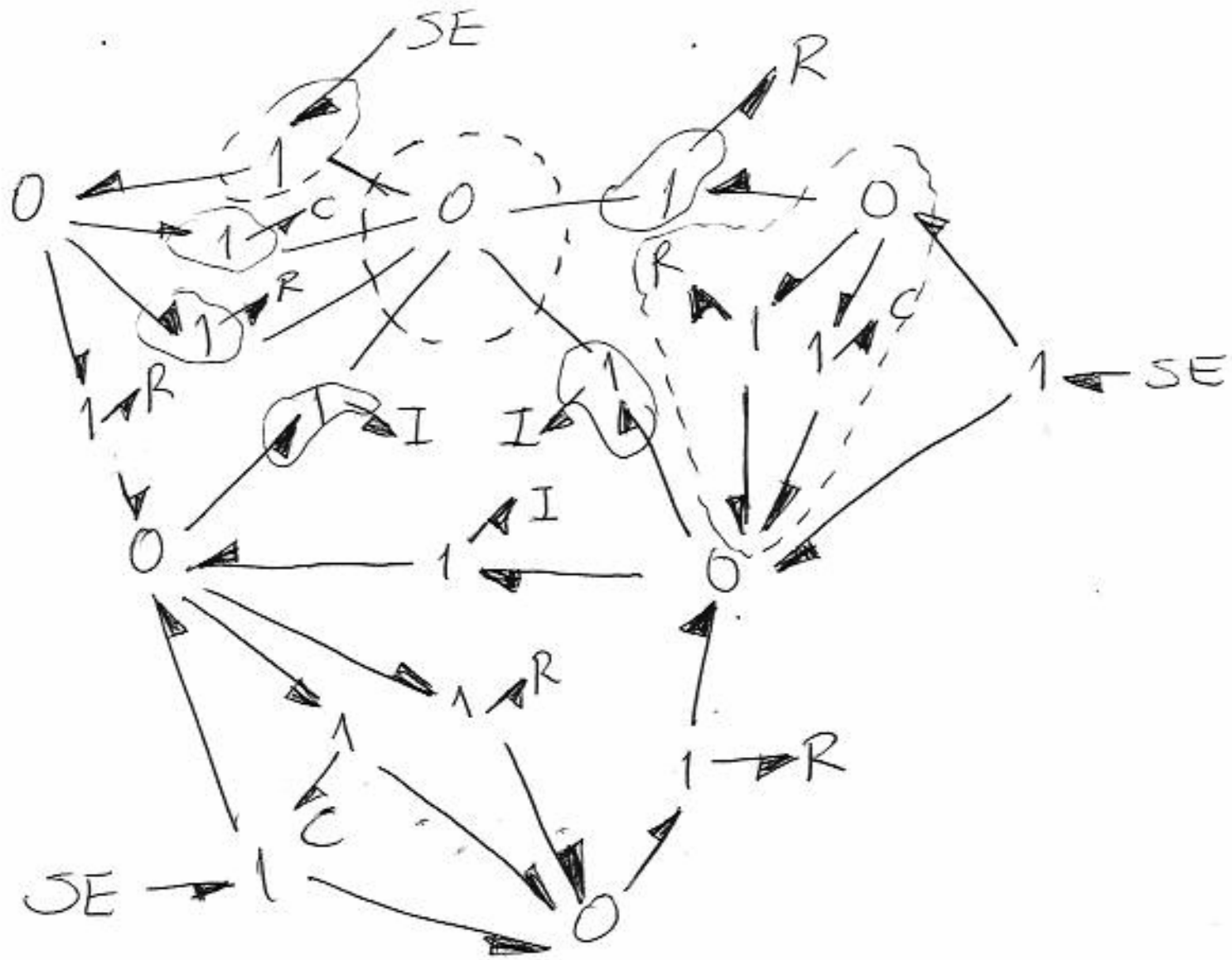


3.) Include a 0-junction for every distinct voltage and insert SE, I, C, R using 1-junctions:

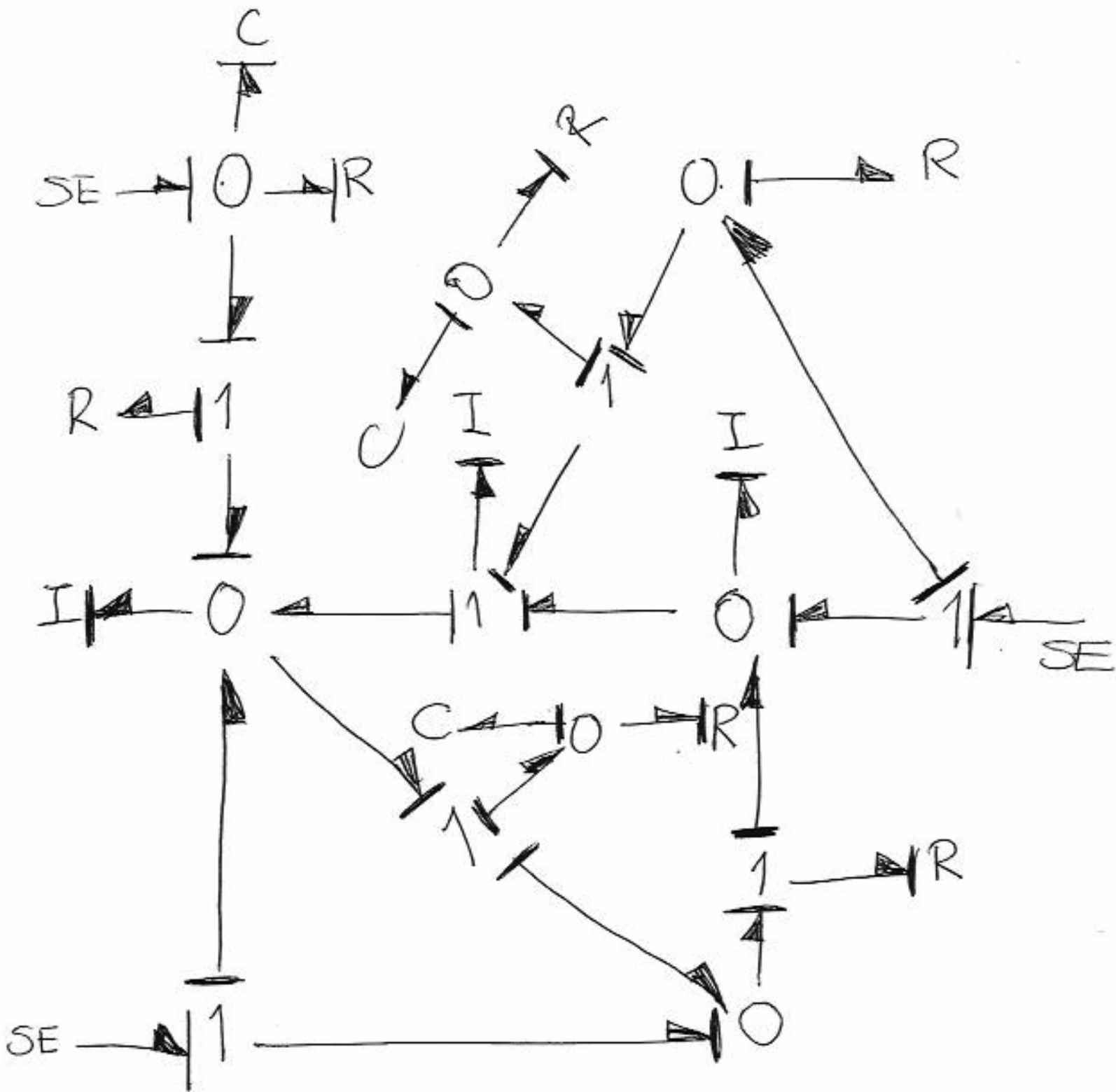


Plan to simplify $\rightarrow 0 \begin{matrix} \nearrow 1 \\ \searrow 1 \end{matrix} \begin{matrix} \nearrow 0 \\ \searrow 0 \end{matrix}, \rightarrow 1 \rightarrow, \begin{matrix} \nearrow 0 \\ \searrow 0 \end{matrix}$

and eliminate one 0-junction. Choose power directions to maximize simplification:

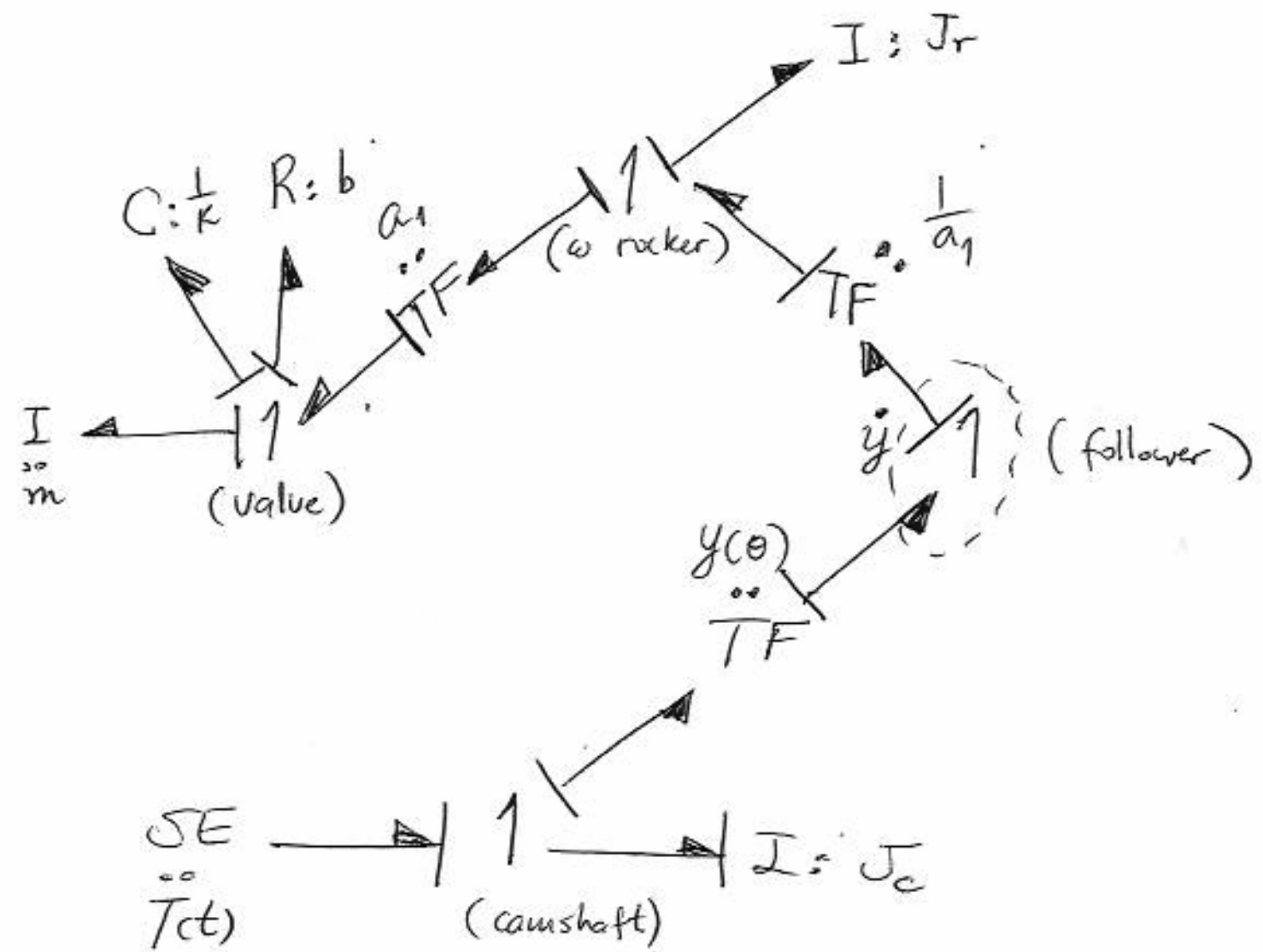


Final simplification:



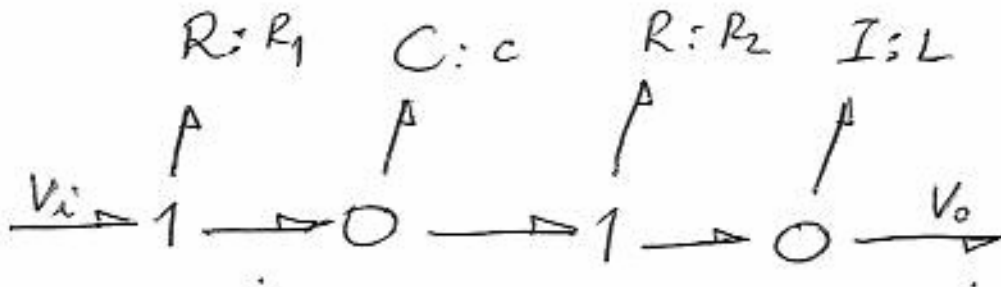
(causality optional)

4a) Assuming no contact is lost between follower & cam:

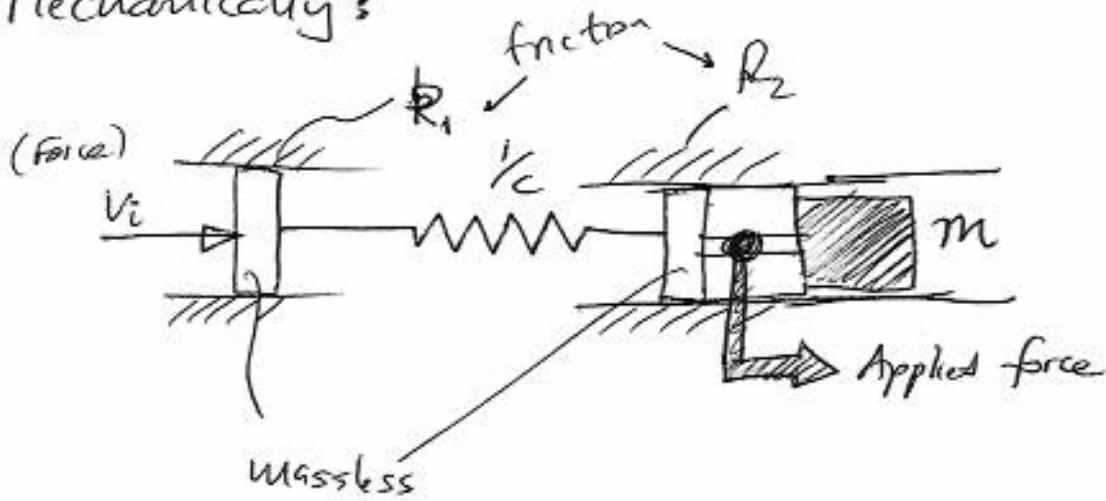


4b)

By inspection:



Mechanically:



Hydraulically: (easier)

