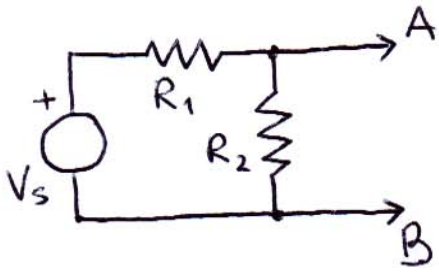
Lecture 3

Thevenin th. - example



Useful trick: to find R_{Th}, short _____ and open _____. R_{Th} is resistance by looking inside the two terminals.

Norton equivalent

same as Thevenin but $\Rightarrow$

$I_N =$, $R_N =$

Linear time-dep. elements

Linear if KVL & KCL contain terms $\propto$

but never

④ Capacitor

2 parallel plates separated by insulator

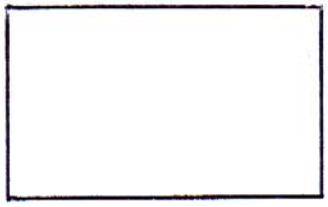
$Q =$

$[C] =$ farads

$C_{Total} =$

$V = \frac{Q}{C}$, $\Rightarrow$ $\frac{dV}{dt} =$

⑤ Inductors

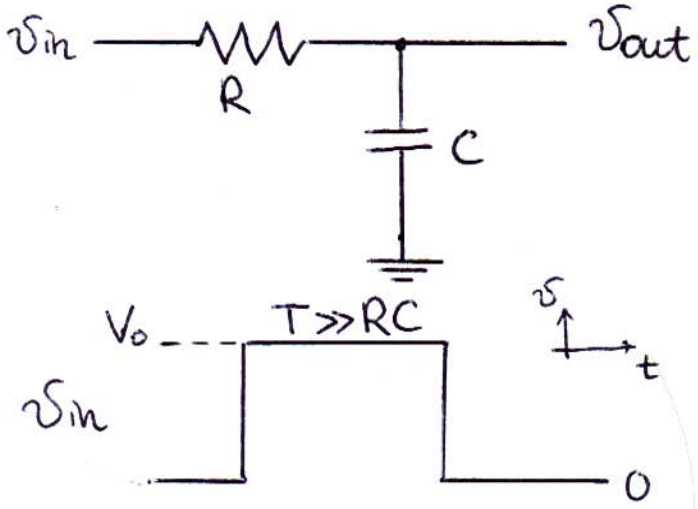


$[L] = \frac{V \cdot s}{A}$ = henries

L_{TOTAL} =

Bulky $\lesssim$ MHz, not routinely used

Low-Pass filter

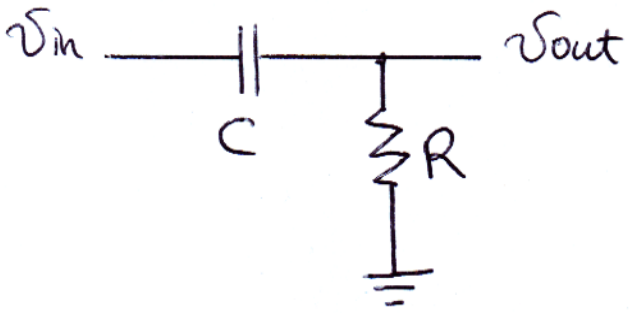


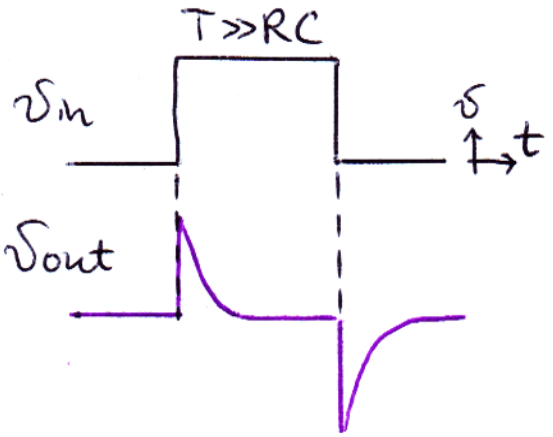
v_{out}

v_R

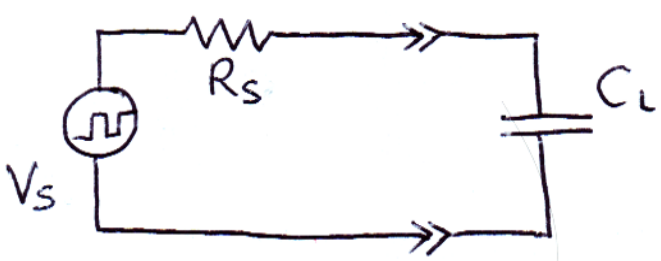
Piece of trivia:
v_c vs t after
step in voltage

High-pass filter

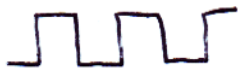




Exp I-10



Function generator produces  drives capacitive load C_L

input  ⇒ output

'Fake' large R_i by adding large R to f-generator.

Need to transmit shape. How?

Soln.