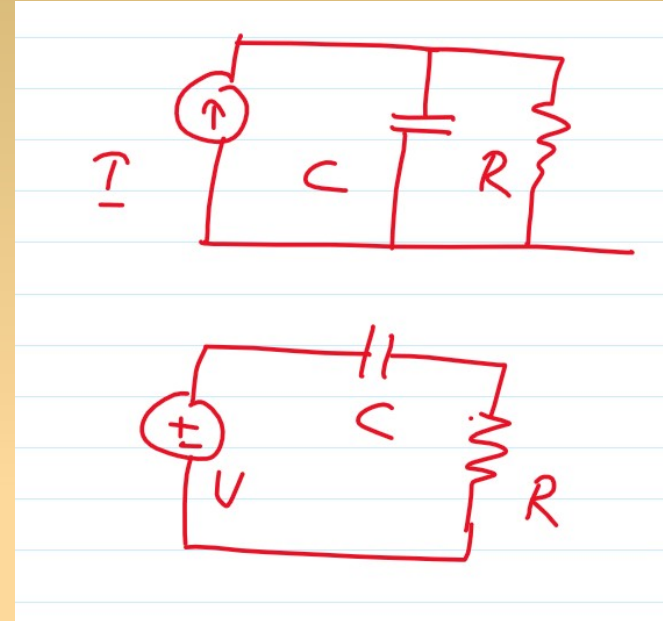
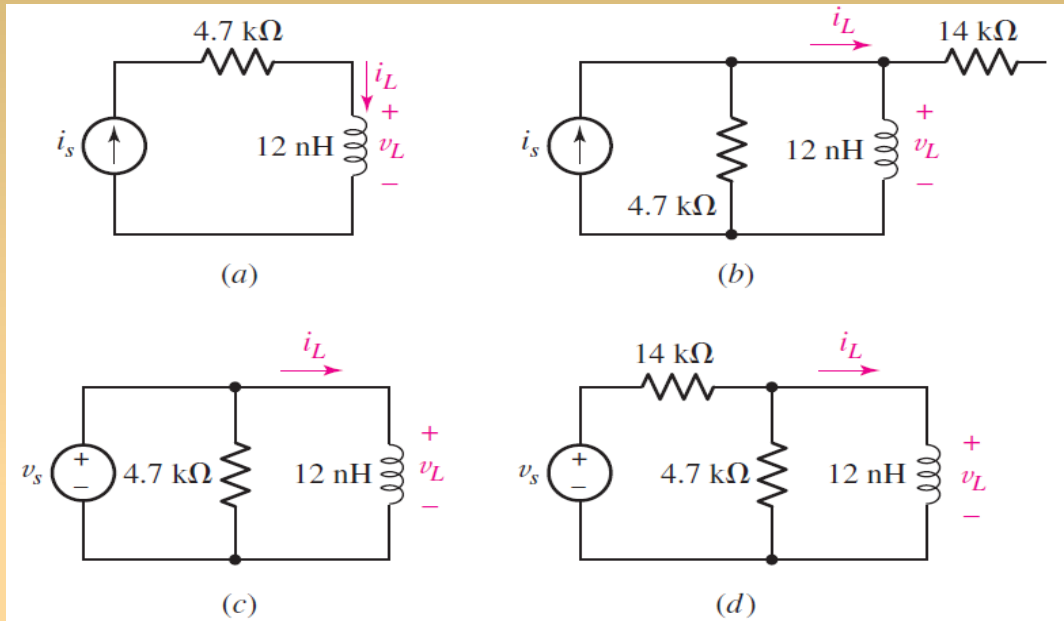


Tutorial #1

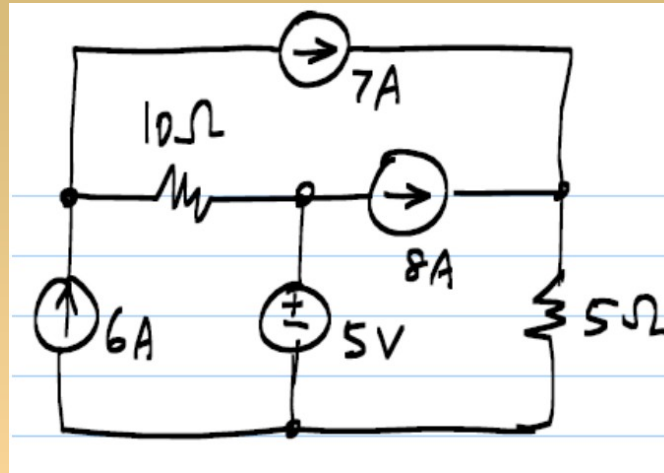
Basic components, voltage & current laws

Problem - 1



For the circuits given in (a) to (d) calculate v_L and i_L for each of the circuits if $i_s = 1\text{ mA}$ and $v_s = 2.1\text{ V}$. For the circuits with capacitor, assuming $I=1\text{ mA}$, $V=2.1\text{ V}$, $R=4.7\text{ k}\Omega$ and $C=1\text{ }\mu\text{F}$, find out currents through and voltages across the capacitors.

Problem - 2



Calculate the power dissipated or generated in each element (state clearly whether it is generated or dissipated).

Problem - 3

Plot the waveforms for the following functions:

(a) $u(t) - 2u(t-2)$

(b) $\delta(t) - 2\delta(t-1) + \delta(t-2)$

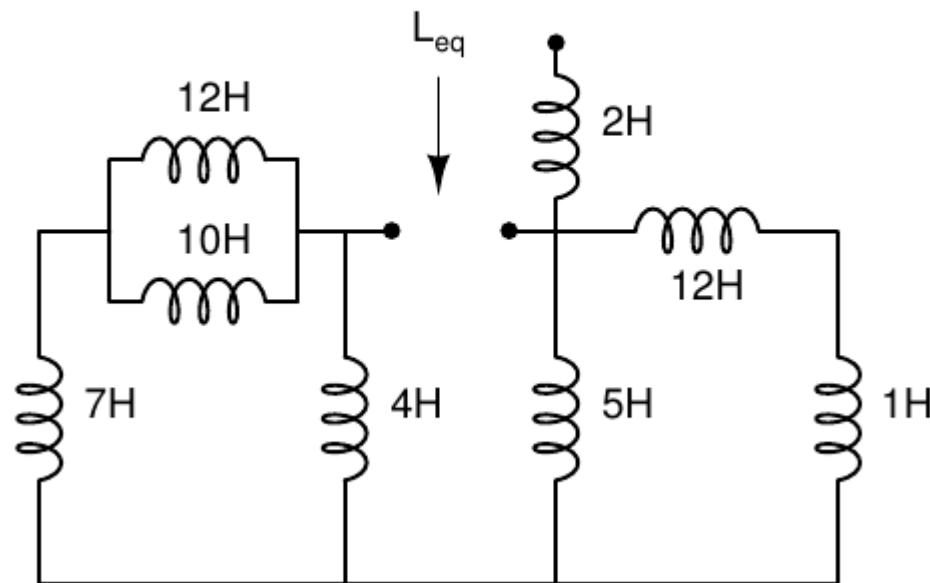
(c) $\exp(-2t)u(t)$

(d) $\cos(t)u(t)$

If the above waveforms are branch currents, plot the branch voltages if the branch element is a linear time-invariant (a) inductor of 1 H (ignore (b) in this case) and (b) capacitor of 1 F. Initial conditions are zero.

Problem - 4

Determine L_{eq}



Problem - 5

7. For the following circuit given below: (a) write the differential equations for $i_1(t)$. With zero initial conditions, solve the differential equation using Laplace transforms, (b) find $v_2(t)$

