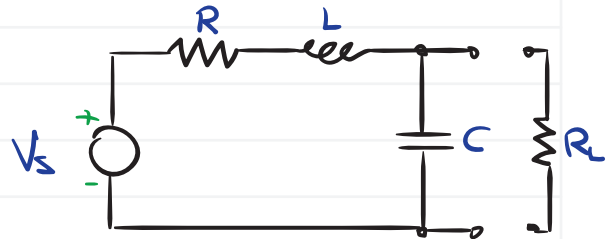
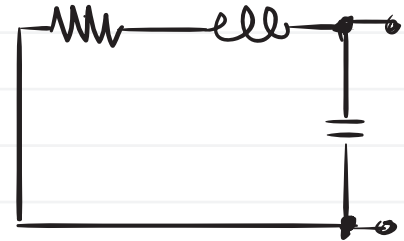
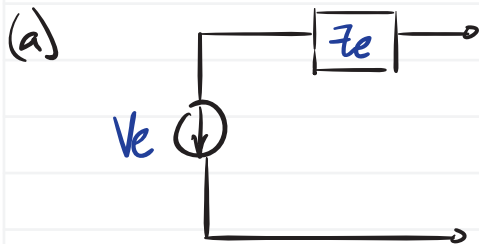


Example: equivalent sources + transfer functions

07 | 1/

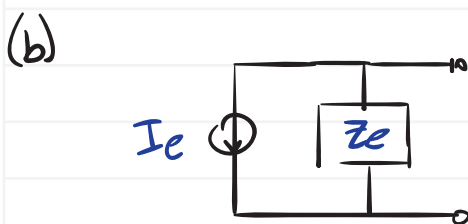
(Based on SD 13.12)

For the ripple filter circuit shown, find
 (a) the Thévenin equivalent source model for the filter,
 (b) the Norton equivalent source model for the filter, and
 (c) the transfer function $\frac{V_R(s)}{V_S(s)}$.

Solution

$$Z_e = \frac{(z_R + z_L) z_C}{z_R + z_L + z_C} = \frac{1}{\frac{1}{z_R + z_L} + \frac{1}{z_C}}$$

$$V_e = \frac{z_C}{z_C + z_R + z_L} V_S$$



$$Z_e = Z_e$$

$$I_e =$$

(c) Voltage divider

$$\frac{V_R(s)}{V_S(s)} = \frac{\frac{z_R z_C}{z_R + z_C}}{\frac{z_R z_C}{z_R + z_C} + z_R + z_L}$$