ELK - Basics of electronics - Test 1

name: ....

index number: ....

1. Transform schematic diagram to find the value of equivalent resistance R_e
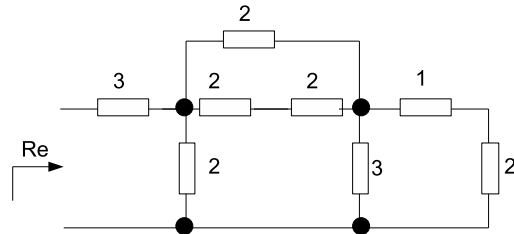

2. Impedance divider R L is used as high-pass filter. Draw the schematic diagram of that filter, find transmittance (transform function) and formula describing cut-off frequency. For $R = 1k\Omega$ and $L = 100mH$ calculate that frequency. Draw amplitude characteristic, describe axes and state cut-off frequency. Is it lower or upper frequency ?

3. For the following circuit:
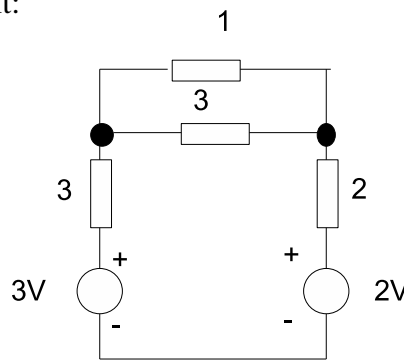
   find currents in all branches. Any method can be chosen.

4. For given one-port
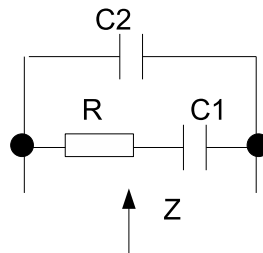
   find impedance knowing, that $C_1 = 10nF$, $C_2 = 20nF$, $R = 10k\Omega$ and $\omega = 10k\frac{rad}{s}$. Find the phase shift between voltage and current.