EE101: Basic Electronics

Theme: Micro-electronics

Tutorial-10, Nov. 1, 2018

Pre-Tutorial Problem

Design an opamp based circuit with the following transfer characteristics:

$$V_{out} = -5V_{in} + 0.4$$

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Tutorial Problems

Q2. Assuming ideal diodes, plot the transfer characteristics of the circuits shown in Fig. 1.
Q3. Assuming the diodes have a cut-in voltage of 0.7 V, plot the transfer characteristics of the circuits shown in Fig. 1.

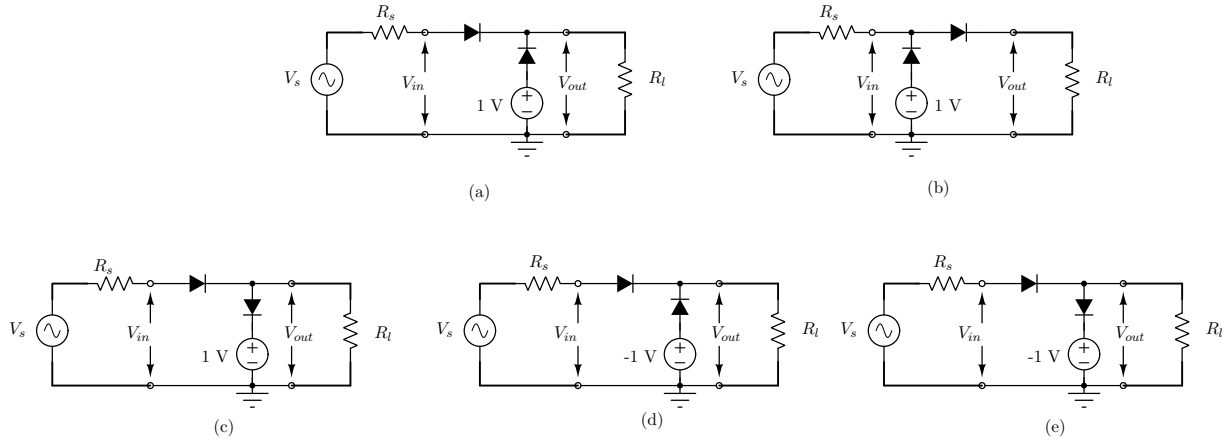

Figure 1: Diode circuits

4. In the circuit shown in Fig. Q4, the source voltage has value $V_S = 100\angle 0^0$ V rms and the operating frequency is $\omega = 100 rad/sec$. Find the average power absorbed by (a) the source, (b) each of the two resistors, (c) each inductance and (d) mutual inductance.

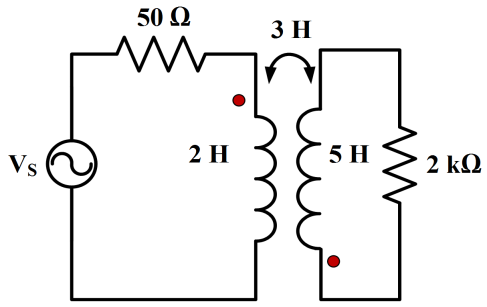

Fig. Q4.

5. Let $I_{S1} = 4t$ A and $I_{S2} = 10t$ A in the circuit shown in Fig. Q5. Find the voltages (a) V_{AD} (b) V_{CD} and (c) V_{BD}.

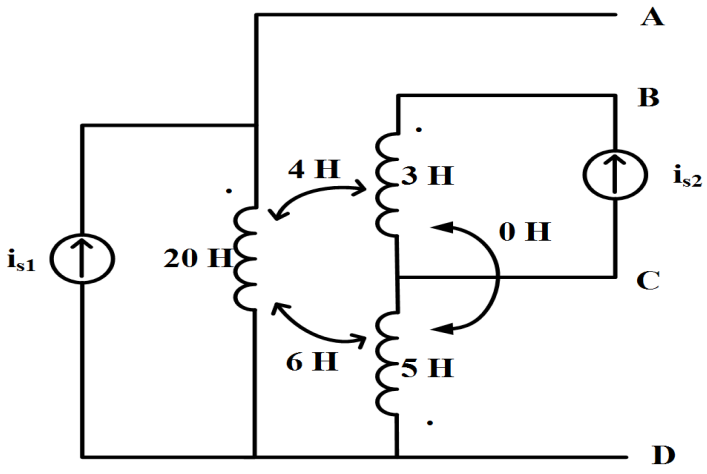

Fig. Q5.