

112-1 ELECTRICAL ENGINEERING FUNDAMENTAL I

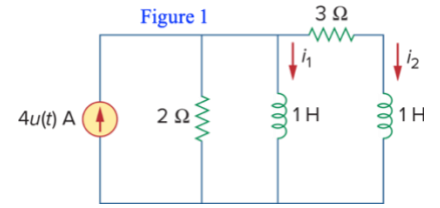
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Quiz 6

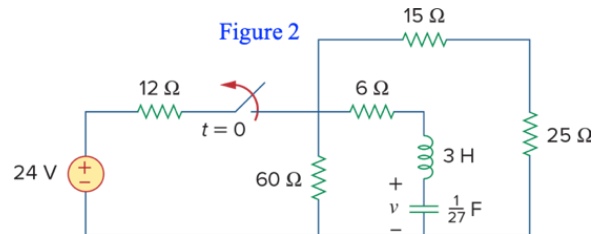
2023.12.28

Note: Show your mathematic works and make your calculation accuracy to at least the 4th digit behind the decimal point.

1. 30% Obtain i_1 and i_2 for $t > 0$ in the circuit of Figure 1.



2. 25% Find α and ω_0 and calculate $v(t)$ for $t > 0$ in the circuit of Figure 2.

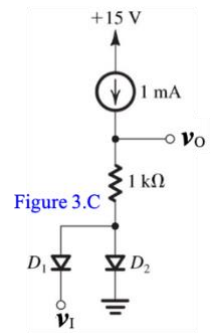
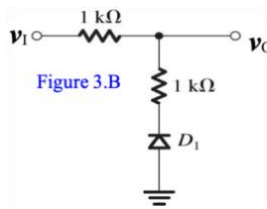
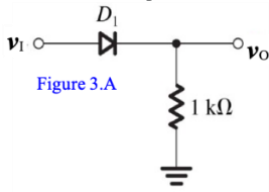


3. 45% For each of the circuits Fig. 3.A~3.C, assume all diodes are *ideal*.

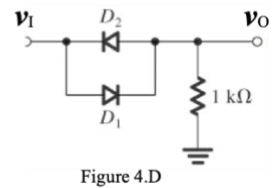
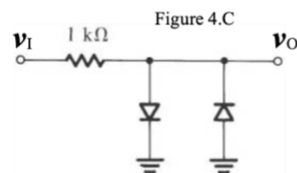
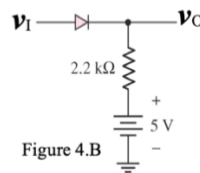
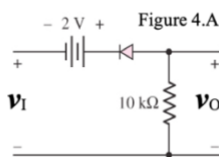
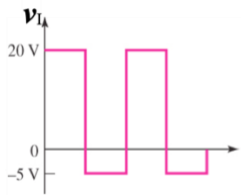
(A) Derive v_O in terms of v_I ;

(B) Sketch transfer characteristics v_O vs v_I ;

(C) Draw output waveforms $v_O(t)$, as v_I is a 1-kHz, 5-V peak sine wave



4. 20% Assume the diodes have a **constant voltage drop** $V_D=0.7$ (V) while conducting (Constant voltage drop model). For Figure 4.A~4.D, with the shown input v_I , sketch the output waveform v_O .



5. 20% Assuming that the diodes are *ideal*, find V and I for the circuit of Figure 5.A and 5.B.

