EE 202-Winter 2013-2014 (132)

HW5

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Due 13/4/2014

Q1 A voltage of 60 cos 4πt V appears across the terminals of a 3-mF capacitor. Calculate the current through the capacitor and the energy stored in it from t = 0 to t = 0.125 s.

Q2 Find the equivalent capacitance between terminals *a* and *b* in the circuit of Fig. 1. All capacitances are in μF.

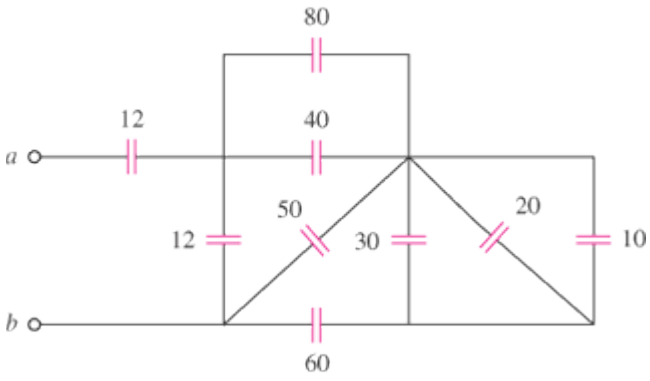

Figure 1

Q3 In the circuit in Fig. 2, let $i_s = 30e^{-2t}$ mA and $v_1(0) = 50$ V, $v_2(0) = 20$ V. Determine: (a) $v_1(t)$ and $v_2(t)$, (b) the energy in each capacitor at $t = 0.5$ s.

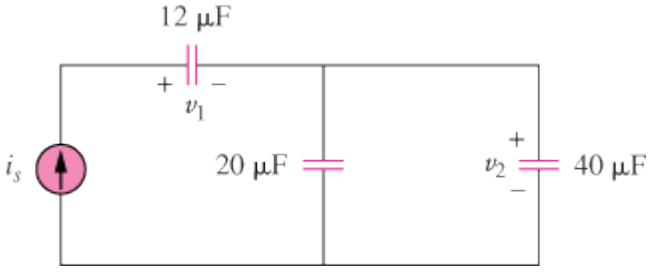

Figure 2

Q4 Determine L_{eq} at terminals ***a*-*b*** of the circuit in Fig. 3.

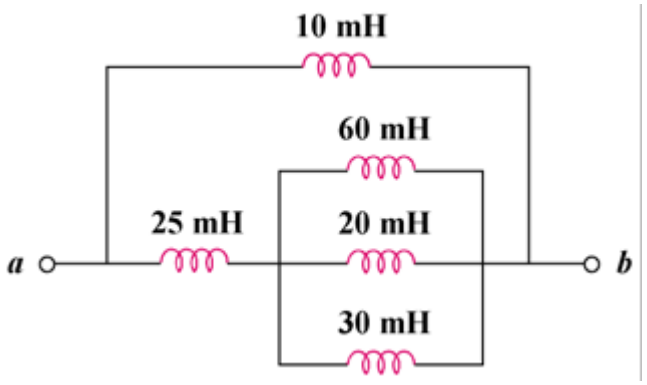

Figure 3

Q5 Determine L_{eq} that may be used to represent the inductive network of Fig. 4 at the terminals.

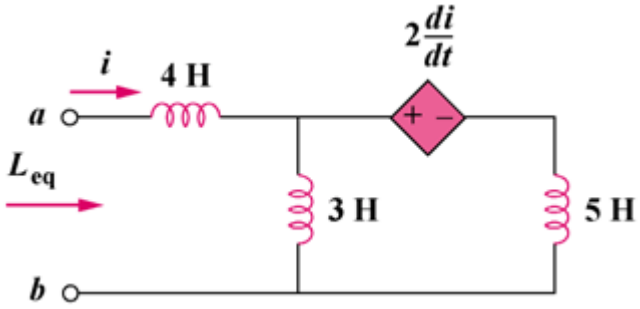

Figure 4

Q6 Find the time constant of each of the circuits in Fig. 5.

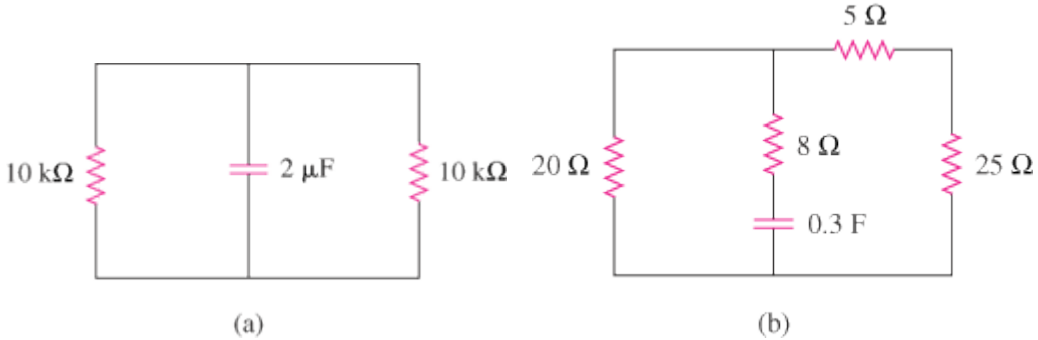

Figure 5

Q7 In the circuit of Fig. 6, $v(0) = 20$ V. Find $v(t)$ for $t > 0$.

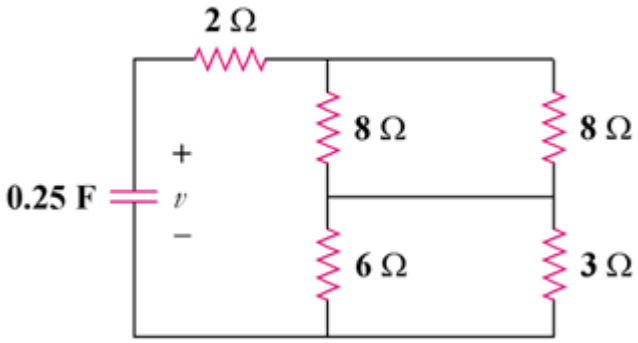

Figure 6

Q8 Consider the circuit of Fig. 7. Find $v_0(t)$ if $i(0) = 2$ A and $v(t) = 0$.

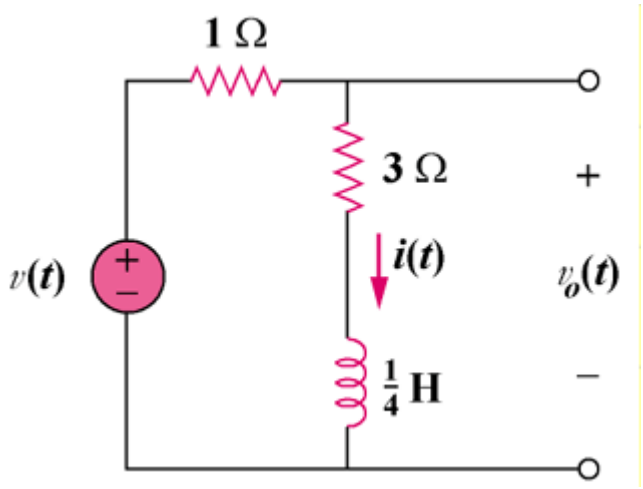

Figure 7