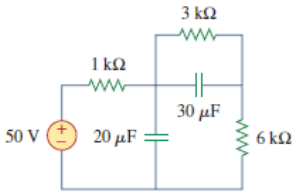
Question 1

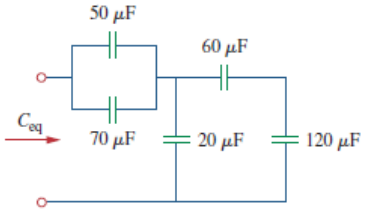
Under dc conditions, find the energy stored in the capacitors in given Fig.



Ans: 20.25 mJ, 3.375 mJ.

Question 2

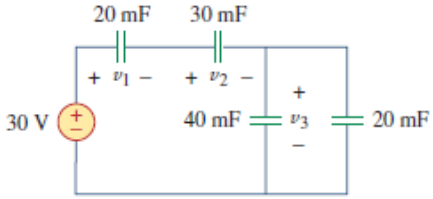
Find the equivalent capacitance seen at the terminals of the circuit in given Fig.



Ans: 40 μF.

Question 3

For the circuit in Fig. given, find the voltage across each capacitor.



Ans: 10V, 5V, and 5V.

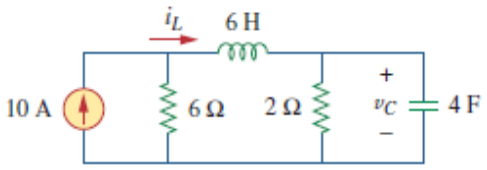
Question 4

The terminal voltage of a 2-H inductor is $v = 10(1 - t)V$. Find the current flowing through it at t=4s and the energy stored in it at t=4s. Assume i(0)= 2A

Ans: -18A, and 320J.

Question 5

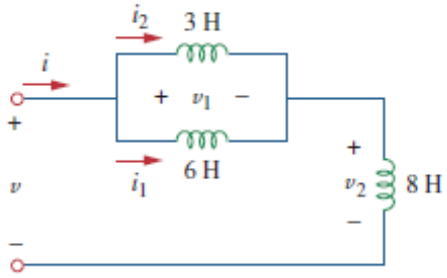
Determine v_c and i_L the energy stored in the capacitor and inductor in the circuit of given figure under dc conditions.



Ans: 15 V, 7.5 A, 450 J, 168.75 J.

Question 6

In the circuit of given figure $i_1(t) = 0.6e^{-2t}\ A$. If $i(0) = 1.4\ A$, find: (a) $i_2(0), (b) i_2(t)$ and $i(t)$ (c) $v_1(t), v_2(t), and\ \ v(t)$.



Ans: (a) 0.8 A, (b) $(-0.4 + 1.2e^{-2t})$ A, $(-0.4 + 1.8e^{-2t})$ A,
(c) $-36e^{-2t}$ V, $-7.2e^{-2t}$ V, $-28.8e^{-2t}$ V.

Question 8

A 4-mF capacitor has the current waveform shown in the given Fig. Assuming that $v_o(0) = 10V$, sketch the voltage waveform $v(t)$.