Tutorial-5 & 6
Winter 2024
Basic Electronics (ECE113)

Q1: In the given following circuit (Figure-1), the switch was initially closed to Position-1 for long time. At time t=0 sec, the switch was transferred to Position-2, now find the value of voltage across capacitor at time t=0 sec and t=160 μsec.
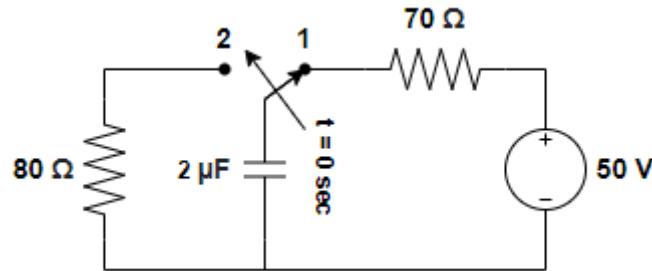

Figure 1

Q2: In the given following circuit (Figure-2), the switch was initially opened for a long time. The switch was closed at time t=0 sec. Do-
(a) Choose R_1, so that the response after t=0 sec will be critically damped.
(b) Choose R_2, so that $V_C(0)$=100 Volt
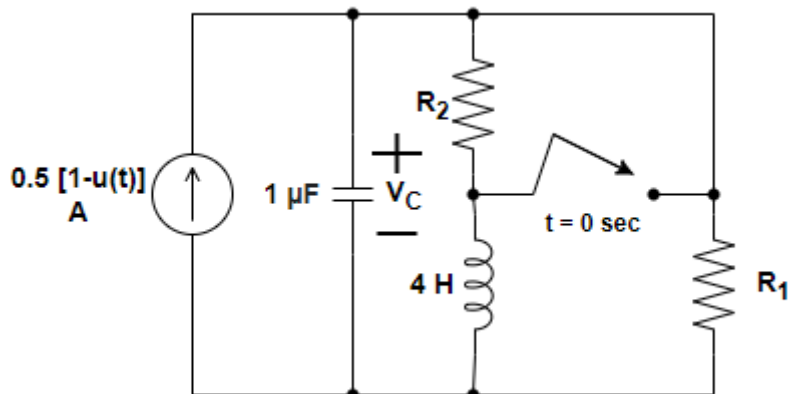**(c)** Find $V_C(t)$ at time t=1 msec.

Figure 2

Q3: Find the value of I_C and I in the given following circuit (Figure-3).
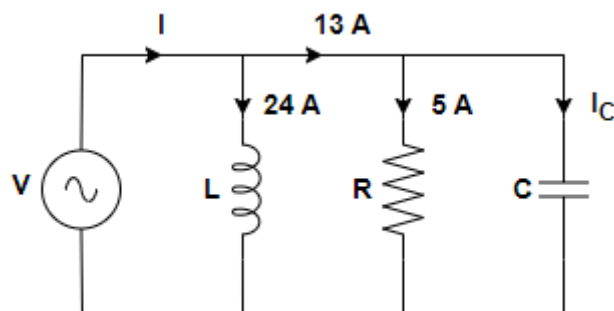

Figure 3

Q4: Find the value of current I_1 and I_L in the circuit shown in Figure-4 for t>0 sec.
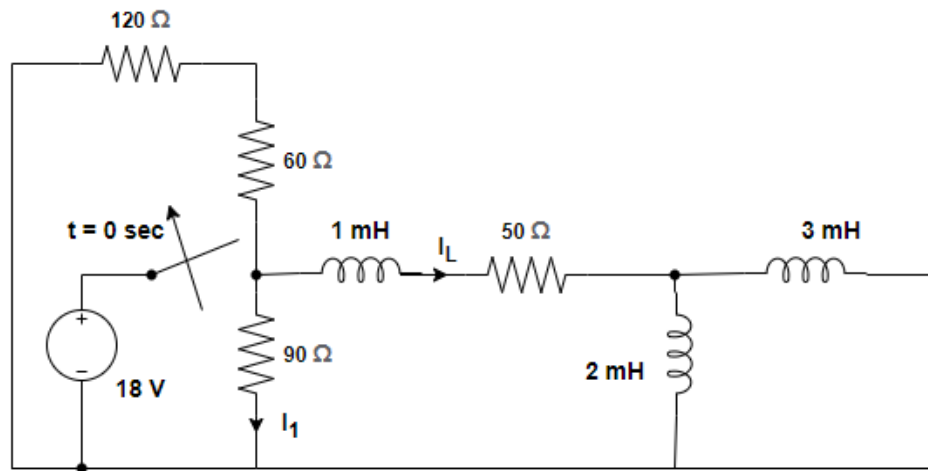

Figure 4

Q5: In the given following circuit (Figure-5), the switch was initially opened for a long time. The switch is closed at t=0 sec then find out the value of-

(a) $I_L(0^-)$
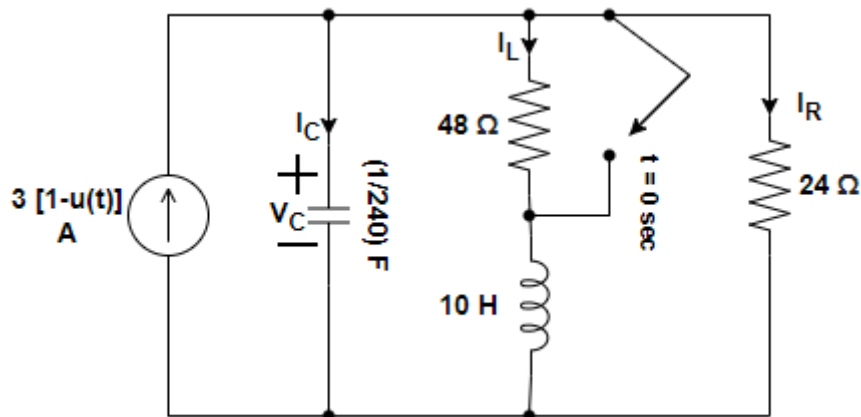(b) $V_C(0^-)$
(c) $I_R(0^+)$
(d) $I_C(0^+)$
(e) $V_C(0.2)$

Figure 5

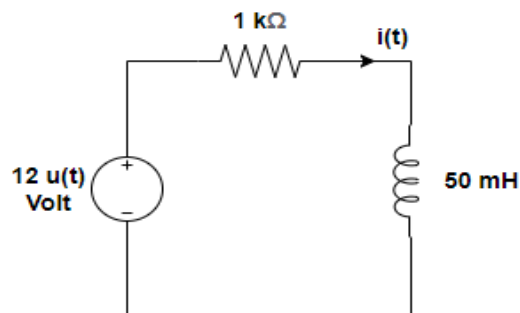**Q6:** For the circuit of Figure-6, find the value of i(t) for t=∞, 0⁻, 0⁺ and 100 μsec.

Figure 6

Q7: Determine the value and draw the curve of i(t) for all value of time in the circuit of Figure-7.
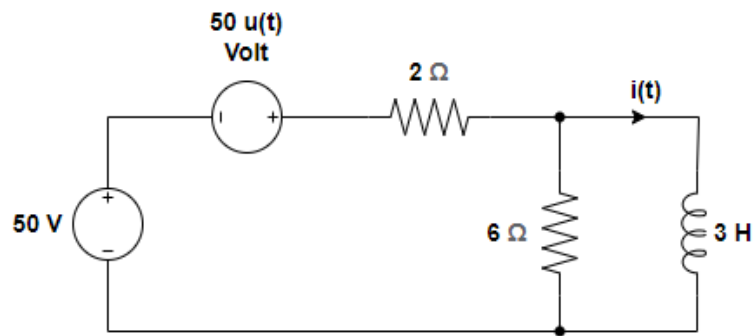
Figure 7

50 u(t)
Volt

2 Ω

i(t)

50 V

6 Ω

3 H

Figure 7

Q8: Find the capacitor voltage $V_C(t)$ and the current i(t) in the 200 Ω resistor of Figure-8 for all time.(The switch transfer from position **a** to **b** at time t=0 sec).

t=0 sec

a
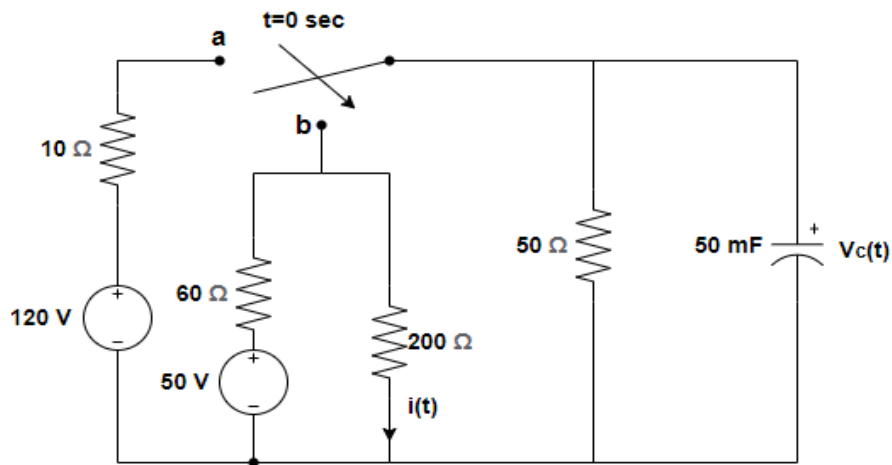
b

10 Ω

50 Ω

50 mF

Vc(t)

60 Ω

120 V

200 Ω

50 V

i(t)

Figure 8