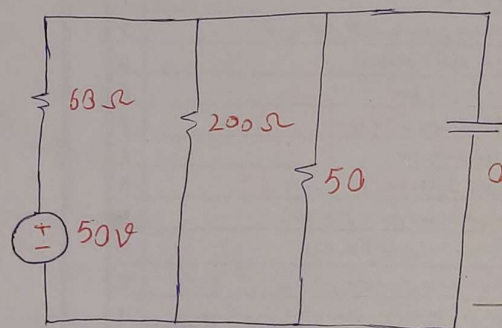


$$V_C(0^-) = \frac{50}{60} \times 120 = 100V$$



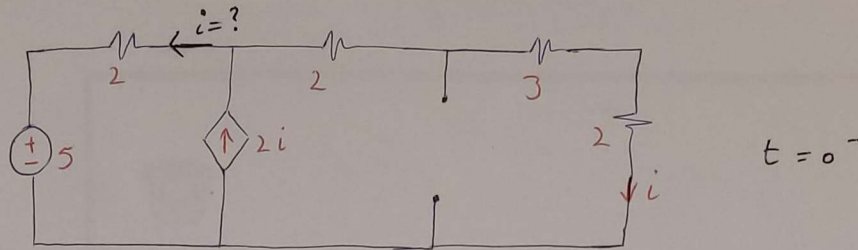
$$A = 50 \parallel 200 = 40$$

$$V_C(\infty) = \frac{40}{40+60} \times 50 = 20$$

$$\tau = R_{eq} \cdot C = (60 \parallel 200 \parallel 50)$$

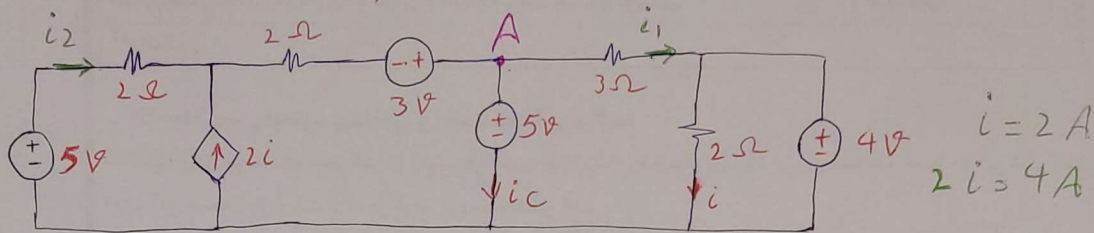
$$24 \times \frac{1}{2} \times 10^{-6} = 12\mu s$$

$$V_C(t) = 20 + 80 e^{-\frac{t}{12\mu s}}$$



$$KVL = -5 - 2i + 2i + 5i = 0 \rightarrow i = 1A$$

$$V_C(0^-) = V_C(0^+) = 3i + 2i = 5i = 5V$$

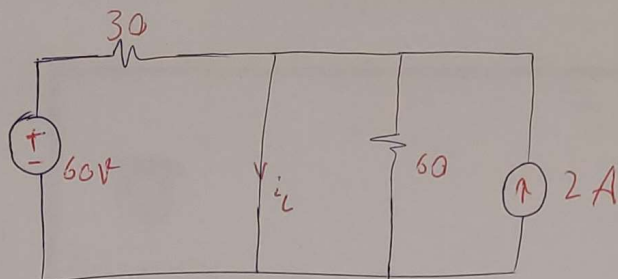


$$KVL = -5 + 2i_2 + 2(i_2 + 2i) - 3 + 5 = 0$$

$$-5 + 4i_2 + 10 = 0 \rightarrow i_2 = -\frac{5}{4}A \quad i_1 = \frac{5-4}{3} = \frac{1}{3}A$$

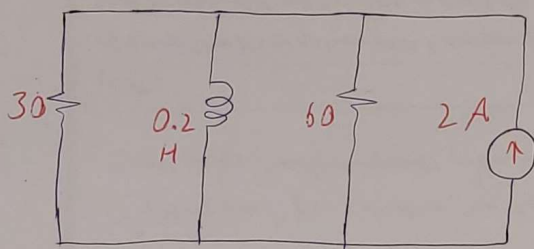
$$KCLA = -i_2 - 2i + i_C(0^+) + i_1 = 0 \rightarrow i_C(0^+) = -\frac{5}{4} + 4 - \frac{1}{3} = \frac{29}{12}A$$

$$i_C(0^+) = C \frac{dV_C}{dt}(0^+) \rightarrow \frac{29}{12} = \frac{1}{12} \frac{dV_C}{dt} \rightarrow \frac{dV_C}{dt}(0^+) = 29 \frac{V}{s}$$



$$t = 0^-$$

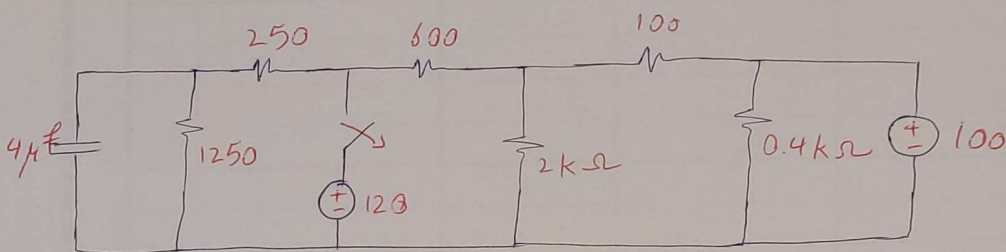
$$i_L(0^-) = 2 + \frac{60}{30} = 4 \text{ A}$$



$$\tau = \frac{0.2}{30 \parallel 60} = \frac{1}{100}$$

$$I_L(\infty) = 2 \text{ A}$$

$$I_L(t) = 2 + (4 - 2)e^{-100t}$$



$$t = 0^- \rightarrow V_C(0^-) = \frac{1250}{1250 + 250} \times 120 = 100 \text{ V}$$

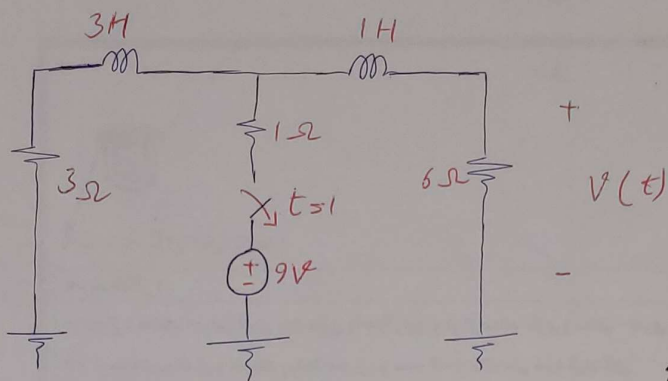
$$t = \infty \rightarrow V(\infty) = 54 \text{ V}$$

$$T = L/R = RC = \left[(100 + 600 + 250) \parallel 1250 \right] = 539.7$$

$$\left[(100 \parallel 2000) + 600 + 250 \right] \parallel 1250 = 538$$

$$538 \times 4 \times 10^{-6} \approx 2 \text{ ms}$$

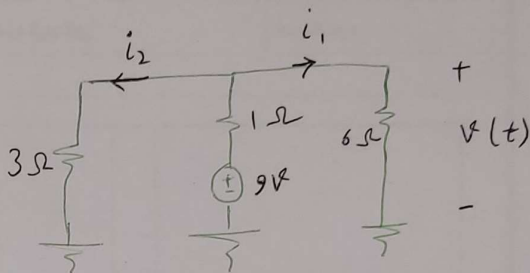
$$V_C(t) = 54 + (100 - 54)e^{-\frac{t}{2 \text{ ms}}}$$



$$t < 0 = t \quad 0 \leq t < 1 =$$

$$I = \frac{9}{3 \parallel 6 + 1} = 3A$$

$$i_1 = 1A \rightarrow V(1^-) = 6 \times 1 = 6V$$



$$t = 1^+$$

$$i_1(1^+) = \frac{3(-2) + 1 \times 1}{3 + 1} = -\frac{5}{4}$$

$$\tau = LG = \frac{4}{9} \quad i_L(\infty) = 0$$

$$i_1(t) = -\frac{5}{4} e^{-\frac{9}{4}t} \rightarrow V(t) = -7.5 e^{-\frac{9}{4}t}$$

$$V(t) = \begin{cases} 6 & 0 \leq t < 1 \\ -7.5 e^{-\frac{9}{4}t} & t \geq 1 \end{cases}$$

