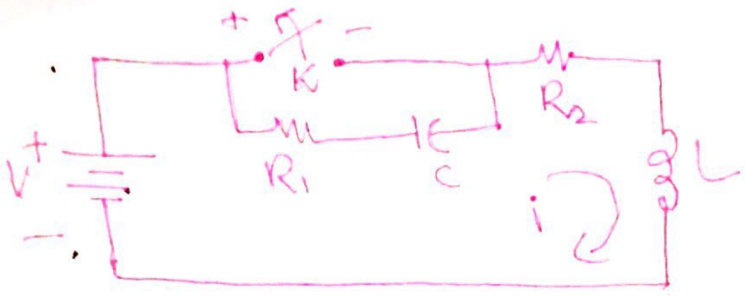
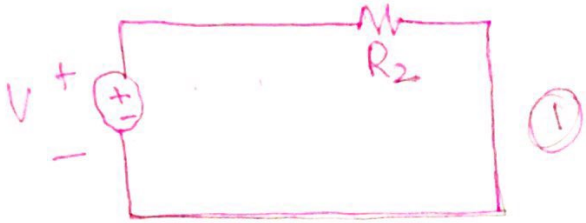
QUIZ 07 SEC 02
SOLUTION



at time $t = 0^-$:

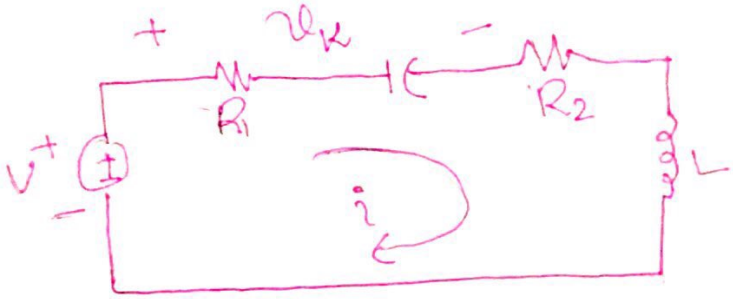


$v_K(0^-) = 0$

$v_C(0^-) = v_{1\Omega}(0^-) = 0 = v_C(0^+)$ ①

$i(0^-) = \frac{v}{R_2} = i(0^+)$ ①

at time t :



Loop equation:

$$v_K + iR_2 + L\frac{di}{dt} = V \quad \text{—①} \quad ②$$

at time $t = 0^+$:

$$v_K(0^+) = iR_1 + v_C(0^+)$$

$$v_K(0^+) = \frac{VR_1}{R_2} V \text{—②} \quad ②$$

putting ② in ① :

$$\frac{VR_1}{R_2} + \frac{VR_2}{R_2} + L\frac{di}{dt} = V$$

$$\frac{di}{dt} = -\frac{VR_1}{R_2 L} \text{ A/s} \quad ③$$