

Tutorial Sheet-7

IEC102

Q1 The switch in the circuit in Fig. 1 moves from position-1 to position-2 at  $t=0$ . Compute  $i_o(t)$  for  $t>0$  and use this current to determine  $v_o(t)$  for  $t>0$ . (Assume that the circuit is in steady state at  $t=0^-$ ).

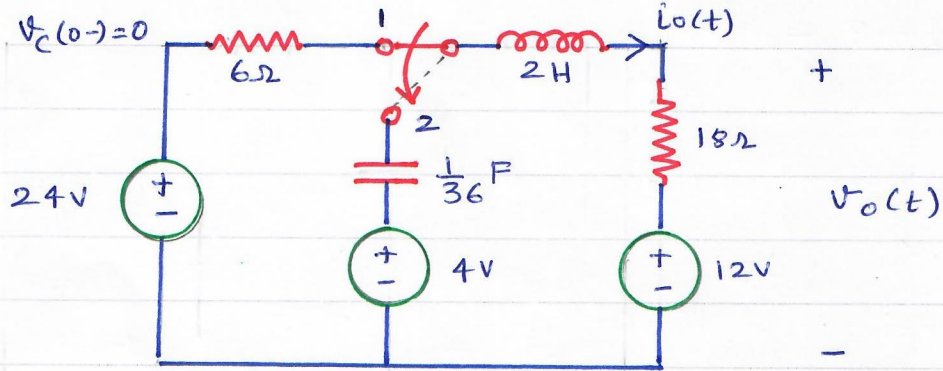
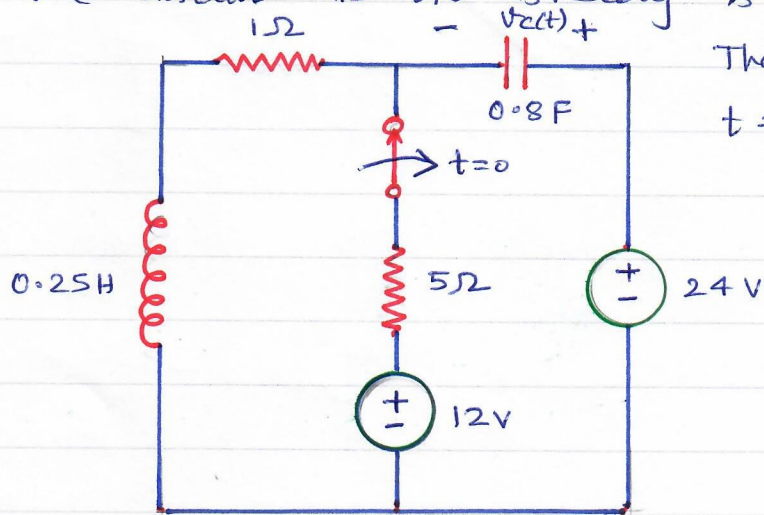


Fig. 1

Q2 Find  $V_C(t)$  for  $t > 0$  in the circuit shown in Fig. Q2. The circuit is in steady state at  $t = 0^-$ .



The switch is open at  $t = 0$ .

Fig. Q2

Q3 The switch in the circuit shown in Fig. Q3 has been closed for a long time and is opened at  $t=0$ . Find  $i_L(t)$  for  $t>0$ .

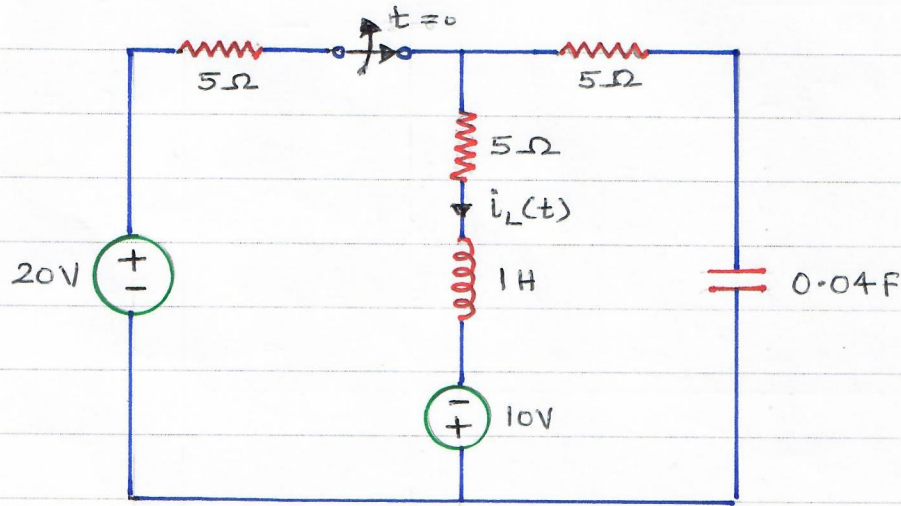


Fig. Q3

Given that the circuit is in steady state at  $t=0^-$ .

(Q) The response of a series RLC circuit is

$$V_C(t) = 50 - 56.25e^{-t} + 6.25e^{-9t} \quad \text{and}$$

$$i_L(t) = 506.25e^{-t} - 506.25e^{-9t}$$

where  $V_C(t)$  and  $i_L(t)$  are the capacitor voltage and inductor currents respectively. Determine the values of  $R$ ,  $L$ , and  $C$ .