

Tutorial sheet - 6

IEC102

Q1 Determine the characteristic equation of each of the following differential equations.

$$a) 5v + 14 \frac{dv}{dt} = 0$$

$$b) \frac{di}{dt} + 18i + \frac{R}{B}i = 0 \quad ; \text{ where } R, B \text{ are constants}$$

Q2 The switch in the network shown in Fig. Q2 moves from position 1 to position 2 at $t=0$. Find $V_o(t)$ for $t>0$.

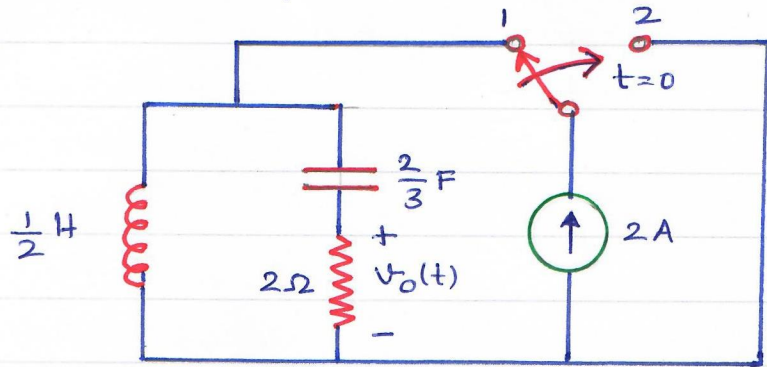


Fig. Q2

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

Q. Find the expression for $V_C(t)$ and $i_L(t)$ for $t > 0$ in the circuit shown in Fig. Q3

Given that $V_C(0^-) = 10 \text{ V}$ and $i_L(0^-) = 0 \text{ A}$

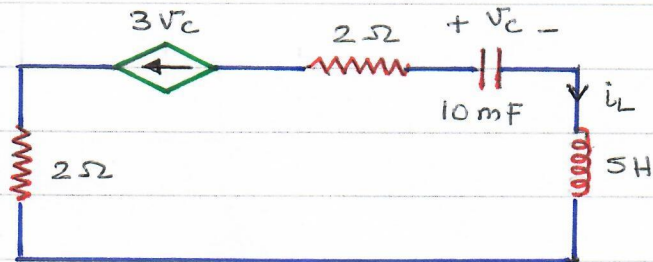


Fig. Q3

Q4 Find $v(t)$ and $i(t)$ for $t > 0$ in the circuit shown in Fig. Q4. Given that $v(0) = i(0) = 0$

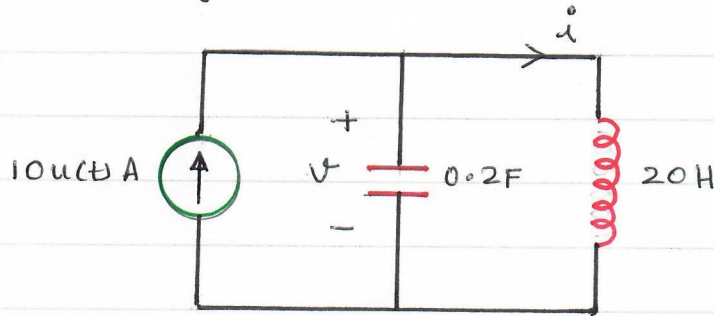


Fig. Q4