C.d.L. Ingegneria Informatica

Prova B dell'esame a distanza di ELETTROTECNICA del 02-7-2021

Supponendo la rete in figura 1 a regime prima dell'istante t=0 s, in cui avviene l'apertura dell'interruttore K, si calcoli la tensione $v_R(t)$ per t≥0.

$$R_1 = \frac{1}{3}\ \Omega,\ \ R_2 = \frac{1}{3}\ \Omega,\ \ R_3 = \frac{1}{8}\ \Omega,\ \ C_1 = 1\ \text{F},\ \ C_2 = 2\ \text{F},$$

$$\beta = 1,\ \ i_g(t) = 200\cos(\omega t + \theta)\ \text{A},$$

STANDARD: $R_0 = 0\ \Omega,\ \ \omega = 3\ {}^{\text{rad}}/_{\text{s}},\ \ \theta = \frac{\pi}{2}$ rad.

$$\left\langle \begin{matrix} v_R(t) = 4\cdot e^{-6\cdot t} - 3\cdot e^{-t} - cos(3t) - \frac{179}{3}\cdot sin(3t)\ \text{V} \\ \left[\begin{matrix} v_{C1}(t) = 2\cdot e^{-6\cdot t} - 9\cdot e^{-t} + 7\cdot cos(3t) + sin(3t)\ V \\ v_{C2}(t) = 6\cdot e^{-6\cdot t} + 3\cdot e^{-t} - 9\cdot cos(3t) + 13\cdot sin(3t)\ V \end{matrix}\right] \end{matrix} \right\rangle$$

LIGHT: $G_0 = {}^{1}/_{R_0} = 0$ S, $\omega = 0\ {}^{\text{rad}}/_{\text{s}}$, $\theta = 0$ rad.

$$\left\langle \begin{matrix} v_R(t) = -\frac{100}{11}\cdot e^{-\frac{12}{11}\cdot t} + \frac{200}{3}\ \text{V} \\ \left[v_C(t) = 25\cdot\left(1 - e^{-\frac{12}{11}\cdot t}\right)\ V\right] \end{matrix} \right\rangle$$

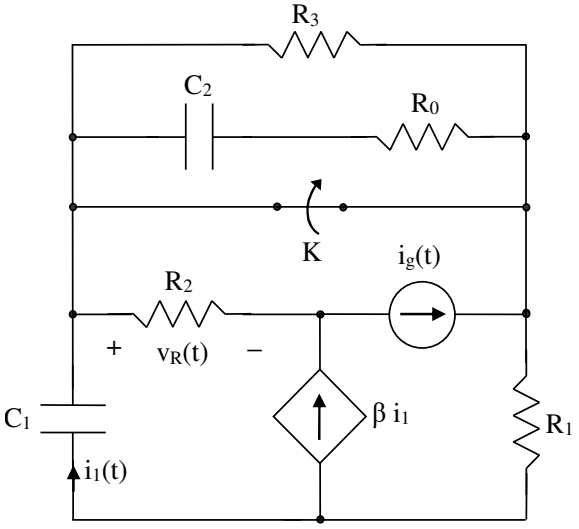

fig. 1