

C.d.L. Ingegneria Informatica
 Prova scritta di ELETTRONICA del 6-4-2018

1) Nell'ipotesi che il circuito di figura 1 sia a regime al tempo $t=0$ in cui l'interruttore K si apre, si calcoli la corrente $i_0(t)$ per $t \geq 0$ s.

$$V_g = 200 \text{ V}, R_0 = 4 \Omega, R = 2 \Omega, C = 1 \text{ mF}, L = 16 \text{ mH},$$

STANDARD: $g_m = 125 \text{ mS}$. $\left\langle i_0(t) = -\frac{400}{51} e^{-375t} + \frac{2600}{187} e^{-\frac{2000}{11}t} + \frac{50}{3} \text{ A} \right\rangle \left\{ \begin{array}{l} v_C(t) = \frac{800}{51} e^{-375t} - \frac{1400}{17} e^{-\frac{2000}{11}t} + \frac{350}{3} \text{ V} \\ i_L(t) = -\frac{100}{17} e^{-375t} + \frac{100}{17} e^{-\frac{2000}{11}t} + 25 \text{ A} \end{array} \right.$

LIGHT: $g_m = 0 \text{ S}$. $\left\langle i_0(t) = 5(1 + 375t) e^{-250t} + 20 \text{ A} \right\rangle \left\{ \begin{array}{l} v_C(t) = -10(7 + 750t) e^{-250t} + 120 \text{ V} \\ i_L(t) = i_0(t) \end{array} \right.$

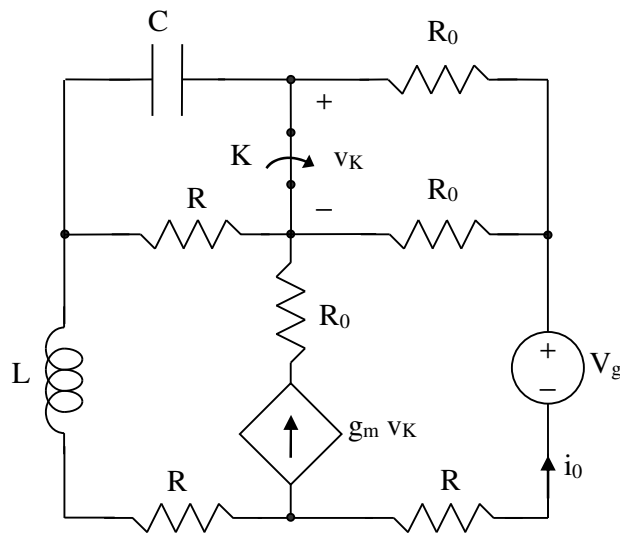


fig. 1

2) Data la rete in regime sinusoidale di figura 2, calcolare la potenza complessa erogata dal generatore di corrente I_g .

$$R = 10 \Omega, X_C = -5 \Omega, X_L = 10 \Omega, \dot{V}_g = 25 \text{ V}, \dot{I}_g = 5(1 - j) \text{ A},$$

STANDARD: $X_M = 5 \Omega$ $\left\langle A_g = \frac{3500}{13} + j \frac{8875}{26} = 269,23 + j 341,35 \text{ VA} \right\rangle$

LIGHT: $X_M = 0 \Omega$ $\left\langle A_g = 290 + j 220 \text{ VA} \right\rangle$

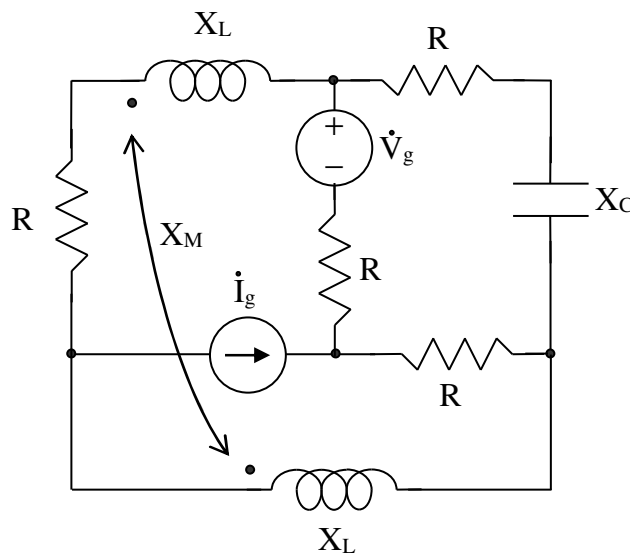


fig. 2