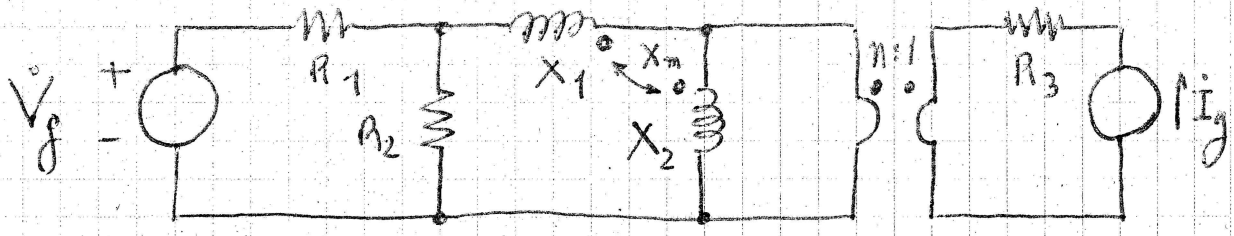
ESAME DI ELETTROTECNICA
27 GIUGNO 2006

1) Calcolare le potenze complesse erogate dei due generatori $\left\langle \overline{A}_{V_G} = \frac{51}{97} + j\frac{42}{97}\ KVA \quad \overline{A}_{I_G} = \frac{83}{97} - j\frac{4.875}{97}\ KVA \right\rangle$

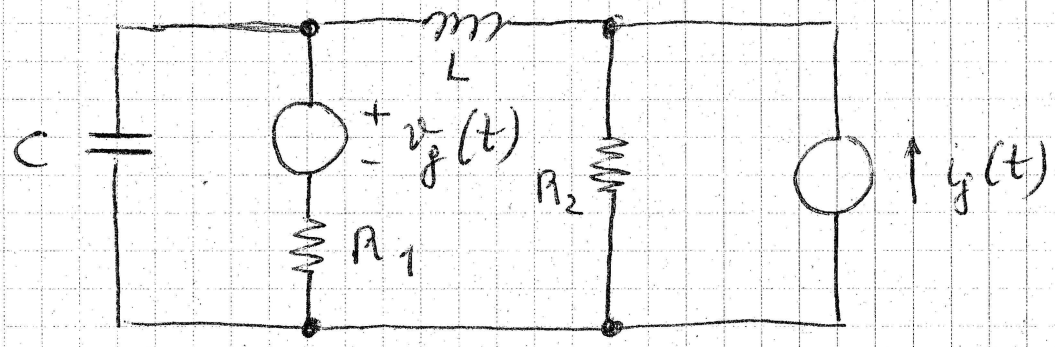


$R_1 = 10\ \Omega \quad R_2 = 20\ \Omega \quad X_1 = 10\ \Omega \quad X_2 = 15\ \Omega$

$X_m = 5\ \Omega \quad R_3 = 10\ \Omega \quad \dot{V}_g = 100\angle 0°\ V \quad \dot{I}_g = 10\angle 90°$

$n = 2$

2) Ricavare le equazioni di stato e le frequenze naturali.



$R_1 = 10\ \Omega \quad R_2 = 20\ \Omega$

$C = 20\ \mu F \quad L = 10\ mH$

$$\left\langle \frac{d}{dt}\begin{bmatrix} i_L \\ v_C \end{bmatrix} = \begin{bmatrix} -\frac{R_2}{L} & -\frac{1}{L} \\ \frac{1}{C} & -\frac{1}{CR_1} \end{bmatrix}\begin{bmatrix} i_L \\ v_C \end{bmatrix} + \begin{bmatrix} \frac{R_2}{L} & 0 \\ 0 & \frac{1}{CR_1} \end{bmatrix}\begin{bmatrix} i_g \\ v_g \end{bmatrix} \right\rangle$$

$$\lambda_1 = -3.5 - j1.658\ KHz \quad \lambda_2 = -3.5 + j1.658\ KHz$$