

Risultati Compiti Elettrotecnica II

①

2.d. 01/02

Compilino n. 1 (27/2/02)

$$1) \begin{cases} i(t) = k_1 e^{-3t} \cos(t) + k_2 e^{-3t} \sin(t) \\ i(0^+) = \frac{1}{2} \text{ A} \\ \frac{di}{dt}(0^+) = -3 \text{ A/sec} \end{cases}$$

$$i(t) = \frac{1}{2} e^{-3t} \cos(t) - \frac{3}{2} e^{-3t} \sin(t)$$

$$I(s) = \frac{1}{2} \frac{s}{s^2 + 6s + 10}$$

$$2) \quad v_c(t) = \frac{V_0}{2RC} e^{-\frac{t}{\tau}} u(t)$$

$$\tau = \frac{2}{3} RC$$

$$i_c(t) = \frac{V_0}{2R} \delta(t) - \frac{3}{4} \frac{V_0}{R^2 C} e^{-\frac{t}{\tau}} u(t)$$

Compilino n. 2 (29/3/02)

$$1) \quad N_1 \simeq 551 ; N_2 \simeq 138$$

$$L_1 \simeq 0.637 \text{ H}$$

$$V_{2\text{eff}} = 25 \text{ Volts}$$

$$2) \quad \begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 1 & 1+s \\ s & s^2+s+1 \end{bmatrix}$$

11/4/02 (R1)

$$1) V_c(0^+) = \frac{2}{3C} V$$

$$i_L'(0^+) = \frac{4R}{3L} A$$

$$3) V_2(t) = 3e^{-2t} + 6te^{-2t} \dots V.$$

11/4/02 (R2)

$$1) L_{AB} = \frac{10 \sqrt{2} \mu_0 A}{t}$$

$$E_{magnetic} \approx 0.393 \times 10^{-2} \text{ joule.}$$

$$2) e \approx 530 \text{ N.m}$$

$$3) \underline{h} = \begin{pmatrix} 0 & 3 \\ -2 & \frac{1}{3} \end{pmatrix}; \text{ non reciproca}$$

23/4/02 (R1)

$$2) V_c(0^+) = 2V; i_L'(0^+) = 0A$$

$$V_c(t) = 2e^{-t} \cos(\sqrt{3}t) - \frac{2\sqrt{3}}{3} e^{-t} \sin(\sqrt{3}t) \text{ Volts}$$

$$V_c(s) = \frac{2s}{4 + 2s + s^2}$$

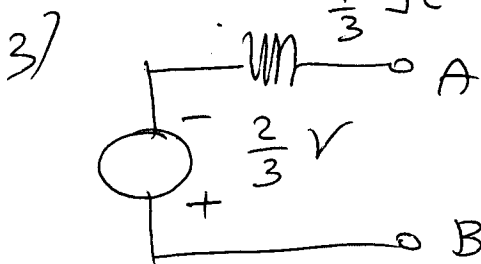
23/4/02 (R2)

1) $P_{\text{traferita}} \simeq 1256 \text{ Watt}$

$E \simeq 62.8 \text{ V}$

$V \simeq 68.8 \text{ V}$

2) $Q = 2$



4) New resistors parameters Z .

$$\underline{\underline{A}} = \begin{pmatrix} \frac{2}{3} & \frac{1}{3} \\ -1 & 0 \end{pmatrix}$$

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix} = \begin{pmatrix} \frac{1}{3} & \frac{2}{3} \\ 0 & 1 \end{pmatrix}$$

1/7/02 (R2)

1) $C_2 = 25 \text{ N.m}$

$P_{M2} = 523.3 \text{ Watt}$

$E_2 = 104.7 \text{ Volts}$

$V = 106.2 \text{ V}$

2)

$$\underline{\underline{Z}} = \begin{pmatrix} 25 & \frac{2}{3} \text{ s} \\ \frac{2}{3} \text{ s} & 2 + \frac{2}{9} \text{ s} \end{pmatrix}$$

(4)

15/7/02 (R1)

$$1) I(t) = \frac{1}{2} e^{-t} \cos(2t) + \frac{1}{4} e^{-t} \sin(2t) \text{ A}$$

$$I(s) = \frac{\frac{s}{2} + 1}{s^2 + 2s + 5}$$

15/7/02 (R2)

$$1) E_2 = 180 \text{ V}$$

$$I_2 = 2I_1$$

$$P_{m2} = 1.895 P_{m1}$$

$$2) \begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 1 + \frac{4s^2}{2s+1} & \frac{2s}{2s+1} \\ 2s & 1 \end{bmatrix}$$

$$3) L_{AB} \approx 0.11 \text{ H.}$$

5/9/02 (R1)

$$3) \frac{V_2}{V_{in}} = \frac{1}{s^2 R^2 C^2 - 2sRC - 1}$$

instabile

5/9/02 (R2)

$$1) I_2 = 20 \text{ A; } n_2 = 100 \text{ giri/min}$$

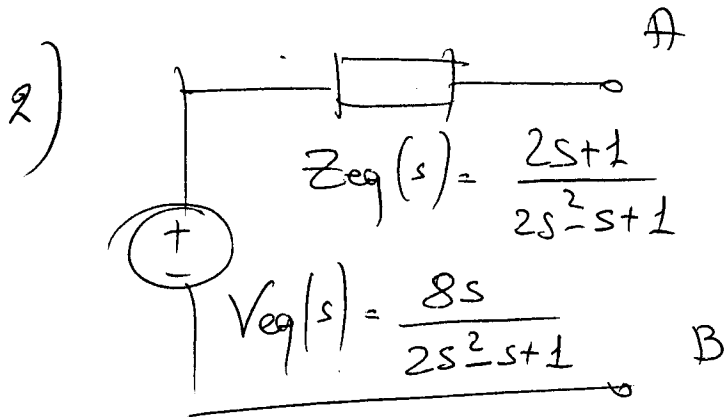
$$C_2 = 189 \text{ N.m.}$$

$$2) h = \begin{pmatrix} 2R & 0 \\ -2 & \frac{1}{R} \end{pmatrix}$$

19/9/02 (R1)

(5)

1) $i'_{2, \text{forzata}}(t) = 2.2361 \cos(t + 206.56^\circ) e^{-2t} + 2$
Ampère



3) $v(t) = -\frac{1}{4} + \frac{1}{5} e^t + \frac{1}{20} \cos(2t) - \frac{1}{10} \sin(2t)$
 $t > 0$

Risultati Compiti Elettrotecnica II

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22.01/02

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$$L_1 \simeq 0.637 H$$

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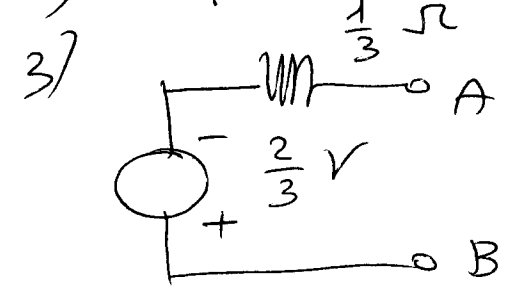
$$V_c(t) = 2e^{-t} \cos(\sqrt{3}t) - \frac{2\sqrt{3}}{3} e^{-t} \sin(\sqrt{3}t) \quad \text{Volts}$$

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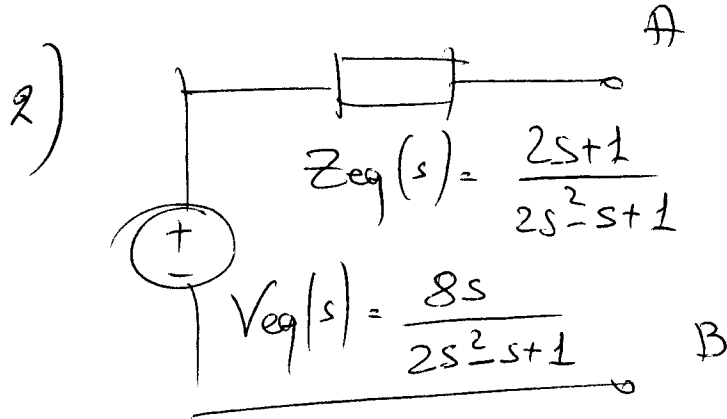
$$C_2 = 1891 \text{ N.m.}$$

$$2) f_h = \begin{pmatrix} 2R & 0 \\ -2 & \frac{1}{R} \end{pmatrix}$$

19/9/02 (R1)

5

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