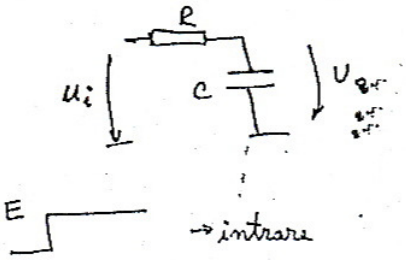
7·III·2007

ELECTRONICĂ DIGITALA

SEMINAR -1



$$u_o(t) = u(\infty) + [U(0) - U(\infty)] \cdot e^{-\frac{t}{\tau}}$$

$$[\Omega] \cdot [F] = [sec]$$

$$\frac{[H]}{[R]} = [sec]$$

$u_o(0) = 0$ (capacitatea era descărcată)

$u(\infty) = E$

$\tau = RC$

Met. I

$$\frac{dx}{dt} + Px = Q \qquad x(0)$$

$$\boxed{\tau = \frac{1}{P}} \qquad \boxed{x(\infty) = \frac{Q}{P}}$$

$$u_o = u_i - R \cdot I$$

$$I = C\frac{du_o}{dt}$$

$$\frac{du_o}{dt} + \underbrace{\frac{1}{RC}}_{P} u_o = \underbrace{\frac{u_i}{RC}}_{Q}$$

$\tau = RC$

$u_o(\infty) = E$

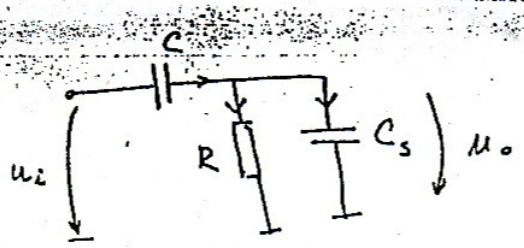
Met II

$$u_o(s) = u_i(s) \cdot \frac{\frac{1}{sC}}{R + \frac{1}{sC}} = \frac{E}{s(1+RCs)} = E\left[\frac{A}{s} + \frac{B}{1+RCs}\right]$$

$u_i(s) \uparrow \frac{E}{s}$

$$= \frac{E}{s} - \frac{E}{s + \frac{1}{RC}}$$

$$\mathcal{L}(e^{-at}) = \frac{1}{s+a} \quad \rightarrow u_o(t) = E\left(1 - e^{-\frac{t}{\tau}}\right)$$



Calculez et. de tiomp.

$$u_o' = R\left[C\frac{d(u_i - u_o)}{dt} - C_s\frac{du_o}{dt}\right]$$

$$= \frac{du_o}{dt} + u_o\frac{1}{R(C+C_s)} = 0 \qquad (u_i \text{ e constantă, derivata e } 0)$$

$$\tau = R(C+C_s)$$

$U_o(\infty) = 0$.