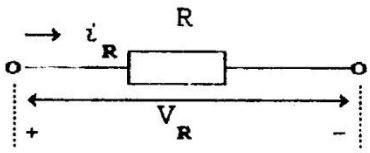
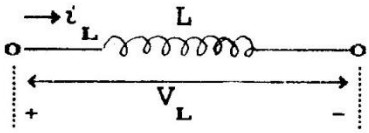
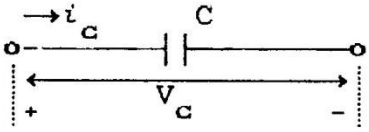
DIAGRAM BLOK DAN FUNGSI ALIH

Penggambaran komponen-komponen fisik (elektris) bisa dengan cara:

a. Persamaan differensial dan persamaan matematika yang lain.
b. Diagram balok.
c. Aliran sinyal

Diagram Balok Sistem Elektris

	Hubunngan Arus tegangan	Hubungan dlm Trans. Laplace
	$V_R(t) = R\, i_R(t)$	$V_R(s) = R \cdot I_R(s)$
	$V_L(t) = L \frac{di_{(t)}}{dt}$	$V_L(s) = L\, s\, I_L(s)$
	$V_C(t) = \frac{1}{C} \int i_c(t)\, dt$	$V_c(s) = \frac{1}{C\,s} I_c(s)$

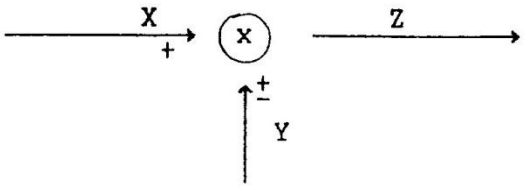
Blok Diagram :

(a). Resistif

(b). Induktif

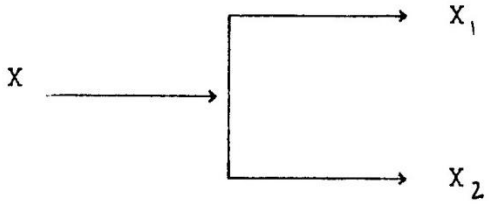
(b). Kapasitif

Titik Penjumlahan :



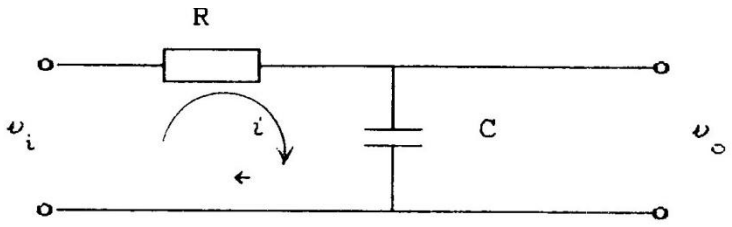
$Z = X \pm Y$

Titik Percabangan :



Contoh .

1. Gambarkan dalam bentuk diagram balok rangkaian RC di bawah ini, yang menyatakan hubungan vi dan v0



Jawab :

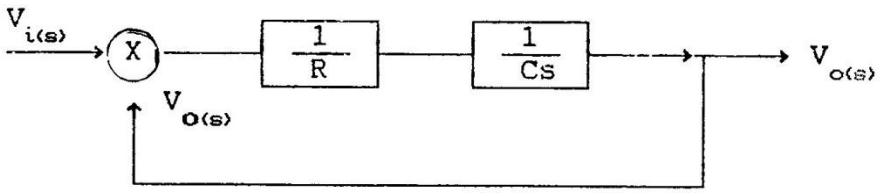
Untuk R

$$I_{(s)} = \frac{1}{R} \left[V_{i\,(s)} - V_{o\,(s)} \right] \quad \ldots\ldots\ldots\ldots (1)$$

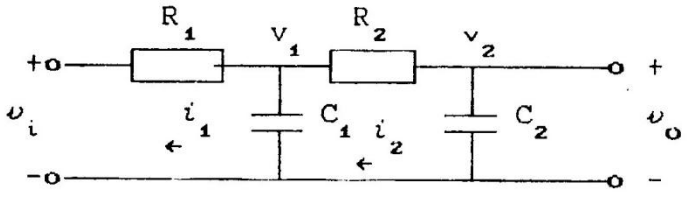
Untuk C

$$V_{o(s)} = \frac{1}{Cs} \; I_{(s)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Gambar diagram bloknya



2.



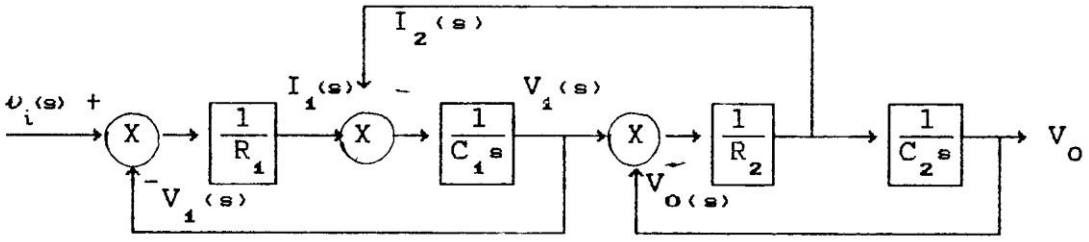
Untuk : $R_1 \rightarrow I_{1(s)} = \frac{1}{R_1} \left[V_{i(s)} - V_{1(s)} \right]$

Untuk : $C_1 \rightarrow V_{1(s)} = \frac{1}{C_1 s} \left[I_{1(s)} - I_{2(s)} \right]$

Untuk : $R_2 \rightarrow I_{2(s)} = \frac{1}{R_2} \left[V_{1(s)} - V_{o(s)} \right]$

Untuk : $C_2 \rightarrow V_{o(s)} = \frac{1}{C_2 s} I_{2(s)}$

Gambar Diagram baloknya :



DAFTAR PUSTAKA

Sulasno, Thomas, 1991, Dasar Sistem Pengaturan, Satya Wacana, Semarang

Pakpahan, Sahat, 1988, Kontrol Otomatik Teori dan Penerapan, Erlangga, Jakarta

Widodo, R.J, 1976, Sistem Pengaturan Dasar, ITB

Widodo, R.J, 1986, Diktat Kursus Sistem Penyaluran, ITB

Distefano, Joseph.J, et.al, Theory and Problems of Feedback and Control Systems, 1983, Schaum Outlines Series, Mc.Graw Hill International Brok Company, Singapore

Kuo, Benyamin.C, 1976, Automatic Control Systems, Preutice Hall of India, New Delhi

Dorf, Richard.C. (Farid Ruskanda), 1980, Sistem Pengaturan, Erlangga, Jakarta

Jones, Alam.J,1990, Sensor Technology Materials and Devices, Department of Industri, Technology and commerce, Commonwealth Australia

Killian, 2004, Modern Control Technology Components and Systems, e book, Delmar

Ogata, Katshuhiko, 1997, Modern Control Engineering, Preutice-Hall International, Singapore