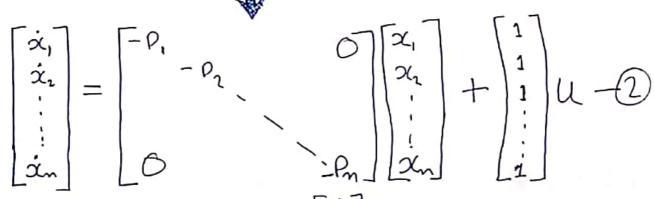
1 Diagonal Canonical form

Consider the trasfer-fraction of a System defined

$$\frac{Y(s)}{U(s)} = \frac{b_0 s^n + b_1 s^{n-1} + \dots + b_{m-1} s + b_m}{(s + p_1)(s + p_1) - \dots + (s + p_m)} = b_0 + \frac{C_1}{s + p_1} + \frac{C_2}{s + p_2} + \dots + \frac{C_m}{s + p_m}$$

where Pi > Pi



$$y = [c, (2 - \cdots c_n) \begin{bmatrix} x_i \\ x_1 \\ \vdots \\ x_n \end{bmatrix} + b_0 y - 3$$

$$Y(s) = b_0 U(s) + \frac{C_1}{s + \rho_1} U(s) + \frac{C_2}{s + \rho_2} U(s) + \cdots + \frac{C_m}{s + \rho_m} U(s)$$

Lotus define Stato Variable as follows:

$$\times_{1}(s) = \frac{U(s)}{S+P_{1}}$$

$$\times_{2}(s) = \frac{1}{S+P_{1}}U(s)$$

$$\times_{3}(s) = \frac{1}{S+P_{2}}U(s)$$

=> The above equations may be one-worther as: x, =-P,x, +4 $S \times_{1} (s) = -P_{1} \times_{1} (s) + U(s)$ $\begin{array}{c}
\dot{\chi}_2 = -\rho_2 \chi_2 + \mu \\
\dot{\chi}_1 = -\rho_2 \chi_2 + \mu
\end{array}$ $S \times_{2}(S) = -P_{2} \times_{2}(S) + U(S) \Longrightarrow$ 2n = - Rom + 4 5x_(s) = -P_xx_(s) +U(s) I form this we can get ear 2 \
(fionst pat of the Solution) ⇒ Y(5)= boU(5) + (,×,(5) + (,×,15) +--- (~×,(5)) d ITimo domai-) y = bou + C, x, + G, x, + ... Cn xm Sound pat of solution)