

* Model Ruang Keadaan Motor DC

State assignment:

RPM

$$y = \omega \text{ (rad/sec)}$$

$$\begin{cases} u = E_a \\ x_1 = I_a \end{cases}$$

$$x_2 = \omega$$

Bes Watt
nom

$$\dot{x}_1 = \frac{dI_a}{dt} = \frac{1}{L_a} (E_a - E_b - I_a R_a)$$

$$= \frac{1}{L_a} (u - K_b x_2 - R_a x_1)$$

$$\dot{x}_1 = -\frac{R_a}{L_a} x_1 - \frac{K_b}{L_a} x_2 + \frac{1}{L_a} u$$

$$\dot{x}_2 = \frac{d\omega}{dt} = \frac{1}{J} (T(t) - B\omega)$$

$$x_2 = \frac{K_m}{J} x_1 - \frac{B}{J} x_2$$

K_m & K_b

B, J ditentukan

R_a diukur
 L_a di tentukan
 $K_b = \frac{E_a}{\omega}$

$B = 0$
steady state