Persamaan Keadaan (State Equation)

$$\dot{x} = \begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \underbrace{\begin{bmatrix} -\frac{R_a}{L_a} & -\frac{K_b}{L_a} \\ \frac{K_m}{J} & -\frac{B}{J} \end{bmatrix}}_{A[2\times2]} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \underbrace{\begin{bmatrix} \frac{1}{L_a} \\ 0 \end{bmatrix}}_{B[2\times1]} u$$

Persamaan Keluaran (Output Equation)

$$y = \underbrace{\begin{bmatrix} 0 & 1 \end{bmatrix}}_{C[1\times2]} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \underbrace{[0]}_{D[1\times1]} u$$

Model Ruang Keadaan

$$\begin{bmatrix} \dot{x} = Ax + Bu \\ y = Cx + Du \end{bmatrix}$$

$$\dot{x} = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

$$A = \begin{bmatrix} -\frac{R_a}{L_a} & -\frac{K_b}{L_a} \\ \frac{K_m}{J} & -\frac{B}{J} \end{bmatrix} \quad B = \begin{bmatrix} \frac{1}{L_a} \\ 0 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 1 \end{bmatrix} \quad D = [0]$$