

$$C_{1,t} = \frac{\frac{d}{dt}x_{AB}(t) + k_m x_{AB}(t)}{k_p x_A} - x_B(t) = 0 \quad (1)$$

$$C_{2,t} = - \left(\frac{d}{dt}x_{AB}(t) \right) (k_m + k_p x_A) - \frac{d^2}{dt^2}x_{AB}(t) = 0 \quad (2)$$