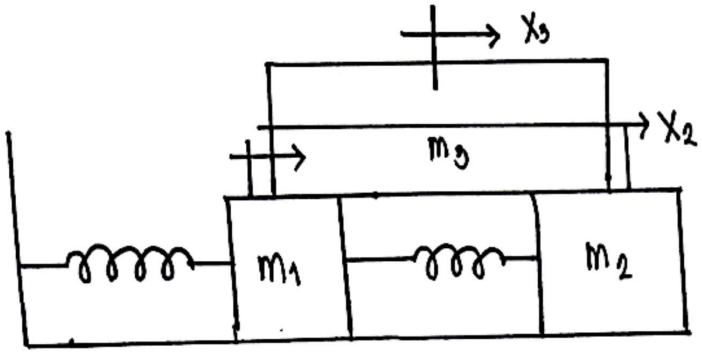

for m_1:

$$0 = m_1\ddot{x}_1 + B_1\dot{x}_1 + B_3\dot{x}_1 + k_1x_1 + k_2x_1 - B_3\dot{x}_3 - k_2x_2$$

$$f(t) = m_2\ddot{x}_2 + B_2\dot{x}_2 + B_4\dot{x}_2 + k_2x_2 - B_4\dot{x}_3 - k_2x_1$$

$$0 = m_3\ddot{x}_3 + B_3\dot{x}_3 + B_4\dot{x}_3 - B_1\dot{x}_1 - B_2\dot{x}_2$$

$x_1 = x_1(t)$ $\quad x_3 = x_2(t)$ $\quad x_5 = x_3(t)$

$\dot{x}_1 = \dot{x}_1(t)$ $\quad x_4 = \dot{x}_3(t)$ $\quad x_6 = \dot{x}_3(t)$

$\dot{x}_1 = \dot{x}_1(t) = x_2$ $\quad \dot{x}_3 = \dot{x}_2(t) = x_4$ $\quad \dot{x}_5 = \dot{x}_3(t) = x_6$

$\dot{x}_2 = \ddot{x}_1(t)$ $\quad \dot{x}_1 = \ddot{x}_2(t)$ $\quad \dot{x}_6 = \ddot{x}_1(t)$

$u_1 = f(t)$

$$0 = m_1\dot{x}_2 + B_1x_2 + B_3x_2 + k_1x_1 + k_2x_1 - B_3x_6 - k_2x_3$$

$$u_1 = m_2\dot{x}_4 + B_2x_4 + B_4x_4 + k_2x_3 - B_4x_6 - k_2x_1$$

$$0 = m_3\dot{x}_6 + B_3x_6 + B_4x_6 - B_1x_2 - B_2x_4$$

$$x_1 = 0x_1 + x_2 + 0x_3 + 0x_4 + 0x_5 + 0x_6 + 0u_1$$

$$\dot{x}_2 = -\left(\frac{k_1+k_2}{m_1}\right)x_1 - \left(\frac{B_4-B_3}{m_1}\right)x_2 + \left(\frac{k_2}{m_1}\right)x_3 + 0x_4 + 0x_5 + \left(\frac{B_3}{m_1}\right)x_6 + 0u_1$$

$$\dot{x}_3 = 0x_1 + 0x_2 + 0x_3 + x_4 + 0x_5 + 0x_6 + 0u_1$$

$$\dot{x}_4 = \left(\frac{k_2}{m_2}\right)x_1 + 0x_2 - \left(\frac{k_2}{m_2}\right)x_3 - \left(\frac{B_2+B_4}{m_2}\right)x_4 - 0x_5 + \left(\frac{B_4}{m_2}\right)x_6 + \frac{u_1}{m_2}$$

$$\dot{x}_5 = 0x_1 + 0x_2 + 0x_3 + 0x_4 + 0x_5 + x_6 + 0u_1$$

$$\dot{x}_6 = 0x_1 + \left(\frac{B_1}{m_3}\right)x_2 - 0x_3 - \left(\frac{B_2}{m_3}\right)x_4 + 0x_5 - \left(\frac{B_3+B_4}{m_3}\right)x_6 + 0u_1$$