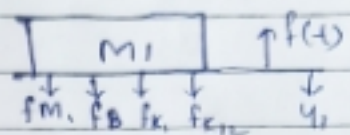


FBD for mass M_1 ,

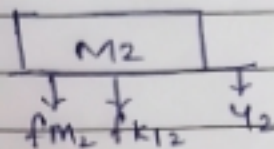


$$f_{M_1} = M_1 \frac{d^2 y_1}{dt^2}, \quad f_b = B \frac{dy_1}{dt}, \quad f_{k_1} = k_1 y_1, \quad f_{k_{12}} = k_{12} (y_1 - y_2)$$

$$f_{M_1} + f_b + f_{k_1} + f_{k_{12}} = f(t)$$

$$\therefore M_1 \frac{d^2 y_1}{dt^2} + B \frac{dy_1}{dt} + k_1 y_1 + k_{12} (y_1 - y_2) = F(t) \quad \text{--- (1)}$$

FBD for mass M_2



$$\therefore f_{M_2} + f_{k_{12}} = 0$$

$$M_2 \frac{d^2 y_2}{dt^2} + k_{12} (y_2 - y_1) = 0 \quad \text{--- (2)}$$