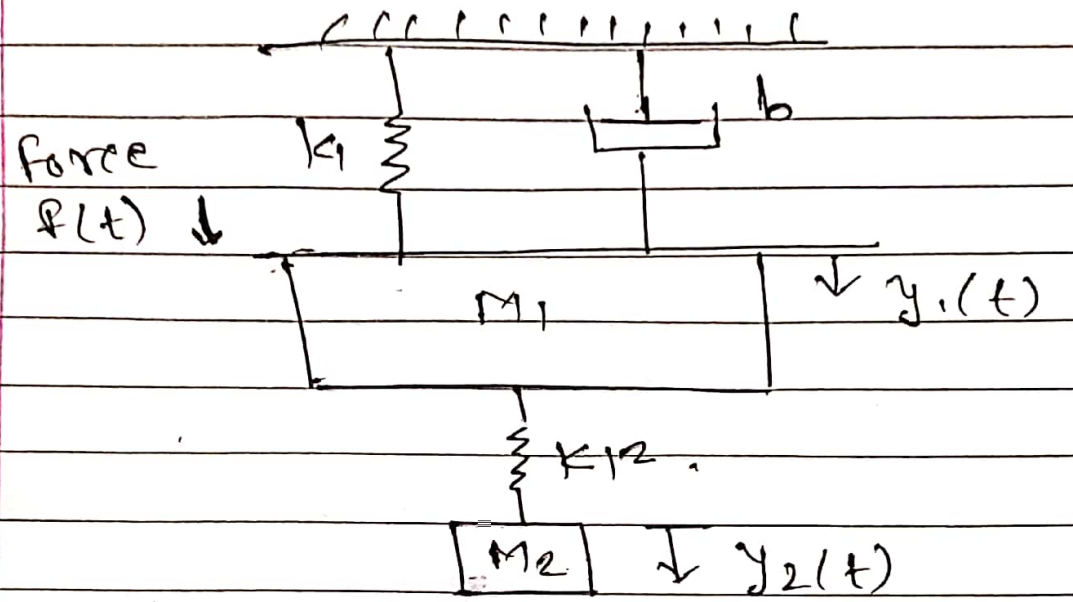
* problem 1 (week1)



$f(t) = 2 * \sin(10 * t)$

$M_1 = 100$, $k_1 = 50$, $b = 50$.

$M_2 = ?$ $k_{12} = ?$

$$f(t) = M_1 \frac{d^2 y_1}{dt^2} + b \frac{dy_1}{dt} + k_1 y_1 + k_2 (y_1 - y_2) \quad \text{---} \quad (1)$$

$$0 = M_2 \frac{d^2y_2}{dt^2} + k_2(y_2 - y_1) \quad -(3)$$

From eqn (i)

$$\frac{d^2y_1}{dt^2} = \frac{1}{M_1}\left[f(t) - B\frac{dy_1}{dt} - k_1y_1 - k_2y_1 + k_2y_2\right]$$

From eqn (2)

$$\frac{d^2y_2}{dt^2} = \frac{1}{M_2}\left[k_2y_1 - k_2y_2\right]$$