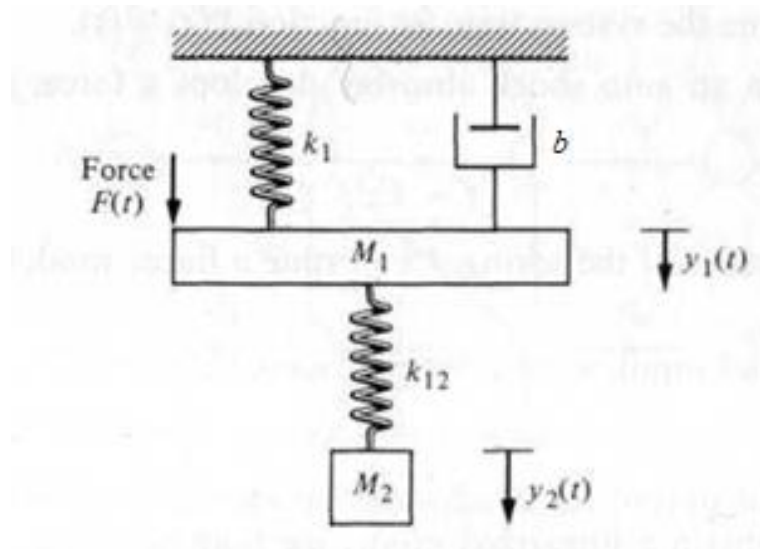


Vibration Absorber

Dynamic Vibration Absorbers are based on the concept of attaching a secondary mass to a primary vibrating system such that the secondary mass dissipates the energy and thus reduce the amplitude of vibration of the primary mass system.

In the given figure, the primary system is assumed to be a damped single-degree-of-freedom system of mass M_1 , stiffness k_1 and damper b . The secondary system (Neutralizer) consists of mass M_2 attached to the primary system using a spring of stiffness k_{12} . The primary system is subjected to harmonic excitation $F(t)$. Develop a Simulink Model of dynamic vibration absorber based on the given equations and data below.



Equation-

$$M_1 \frac{d^2 y_1}{dt^2} + k_{12}(y_1 - y_2) + b \frac{dy_1}{dt} + k_1 y_1 = F(t)$$

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

Where,

$$M_1 = 20 \text{ Kg}$$

$$M_2 = 200 \text{ Kg}$$

$$k_1 = 100 \text{ N/m}$$

$$b = 100 \text{ N-s/m}$$

$$k_{12} = 400 \text{ N/m}$$

Instructions for modelling-

1. While giving names to blocks, rename **gains** as **Gain1, Gain2, ...** from top to bottom and **Integrators** as **Integrator1, Integrator2...** from left to right.
2. Use **only** calculated value for the gain blocks rather than assigning it to a variable.

