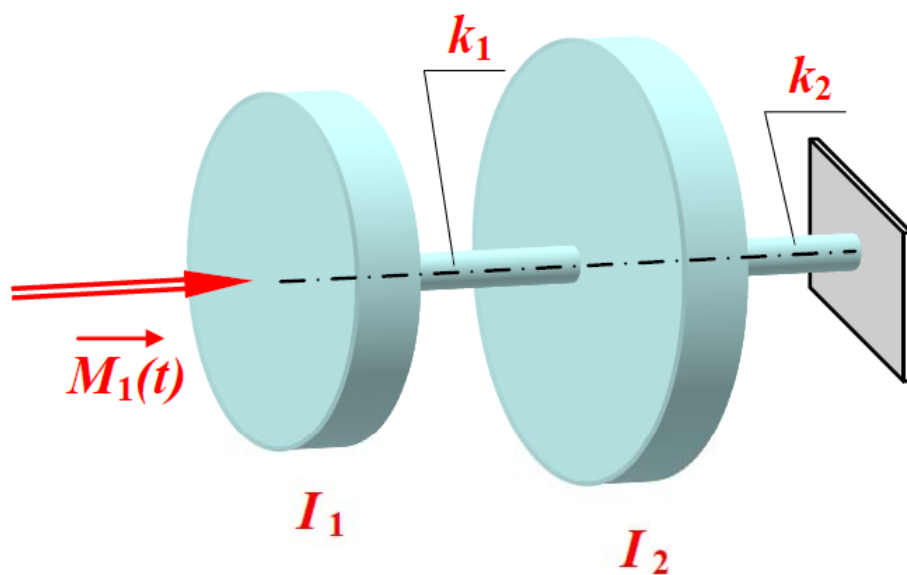
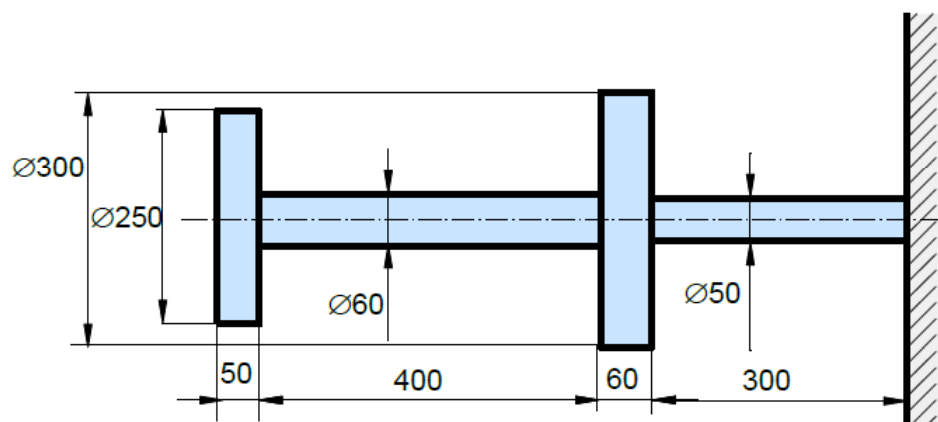


Example 3:

For the system in the picture find out its eigenfrequencies, shapes of eigenmodes and free and forced vibration.



Known parameters:

$$M_1(t) = M_0 \cdot \sin(\omega t),$$

$$M_0 = 5 \text{ Nm}, \quad \omega = 1300 \text{ s}^{-1},$$

$$t=0: \quad \varphi_1(0) = \varphi_{10} = 0,001 \text{ rad},$$

$$\varphi_2(0) = \varphi_{20} = 0,003 \text{ rad},$$

$$\omega_1(0) = \omega_{10} = 0 \text{ s}^{-1},$$

$$\omega_2(0) = \omega_{20} = 0 \text{ s}^{-1},$$

$$I_1 = 0,17 \text{ kgm}^2, \quad I_2 = 0,38 \text{ kgm}^2,$$

$$k_1 = 2,61 \times 10^5 \text{ Nm/rad},$$

$$k_2 = 1,68 \times 10^5 \text{ Nm/rad},$$