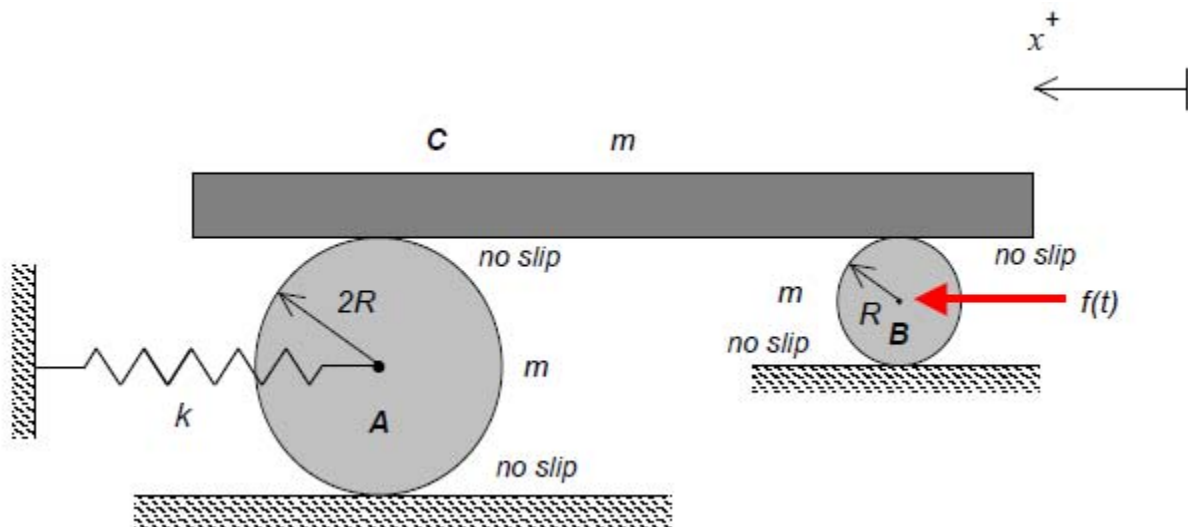


Homework H.6.J

Given: The system shown below consists of two homogenous disks, A and B, and block C. A force $f(t) = f_0 \sin \omega t$ acts at the center of disk B. The spring is unstretched when $x = 0$ m.

Find: For this problem:

- Derive the single differential equation of motion for the system in terms of the coordinate x ; and
- Determine the amplitude of the forced response of block C when ω is one-half the natural frequency of the system.



Use the following parameters in your analysis: $m = 10$ kg, $k = 4000$ N/m, $f_0 = 50$ N, and $R = 0.1$ m.