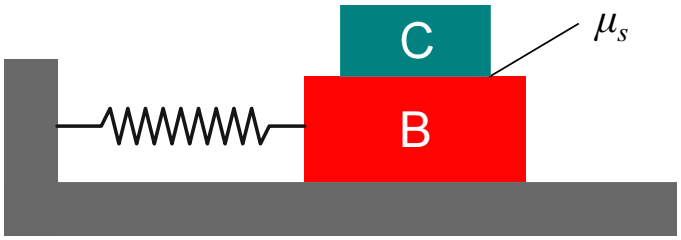
Practical 7 Questions

1. Block B in the figure is free to slide on the horizontal surface. With block C placed on top of B, the system undergoes simple harmonic motion with an amplitude of 0.10 m. Block B has a speed of 0.24 m/s at a displacement of 0.060 m from its equilibrium position. (a) Determine the period of the motion. (b) What minimum value for the coefficient of static friction μ_s between B and C is needed if C is never to slip? Ignore any friction between B and the horizontal surface.



2. A lobsterman's buoy is a solid wooden cylinder of radius r and mass M. It is weighted at one end so that it floats upright in calm seawater, having density ρ. A passing shark tugs on the slack rope mooring the buoy to a lobster trap, pulling the buoy down a distance x from its equilibrium position and releasing it. Show that the buoy will execute simple harmonic motion if the resistive effects of the water are ignored, and determine the period of the oscillations.