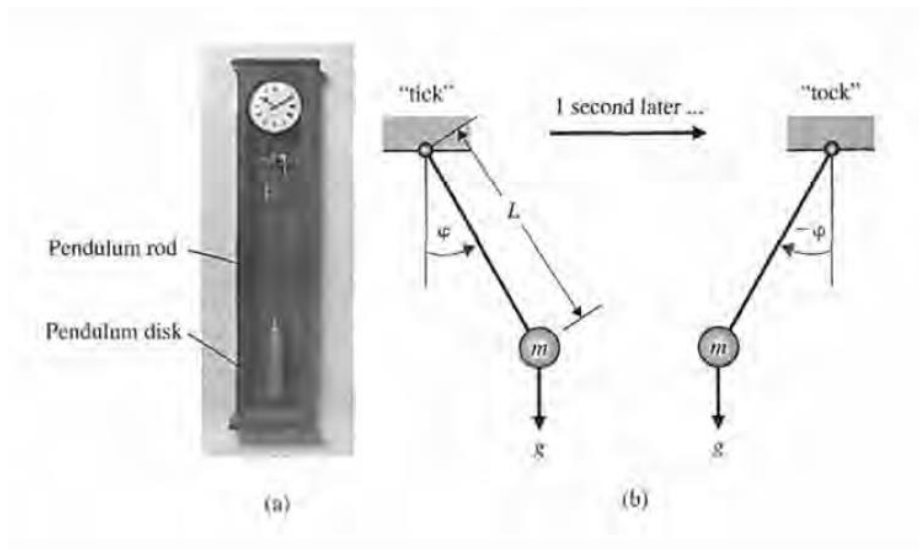# Clock Pendulum

Consider the clock shown in figure (a) and (b). The pendulum rod of length L supports a pendulum disk. Assume that the pendulum rod is a massless rigid thin rod, and the pendulum disc has mass m. Model the Clock Pendulum System in Simulink, so that the period of motion $\frac{d\emptyset}{dt}$ is 2 seconds.

Assume **small angles, $\emptyset$**, in the analysis so that $\sin\emptyset \approx \emptyset$ *and* $\cos\emptyset \approx 1$.

Equation-

$$mL^2 \frac{d^2\emptyset}{dt^2} + mgL\emptyset = F$$

Where,

$m = 1\ Kg,\ L = 0.9939\ m,\ g = 9.81\frac{m}{s^2}$

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.