

## Module 10 - Lesson 1

### Simple Harmonic Motion

**Question 1:** A mass attached to a spring oscillates along the vertical following the equation  $y = 2 \sin(\pi t)$ . Determine (a) the frequency, (b) the amplitude of the motion.

**Question 2:** Write expressions for simple harmonic motion with amplitude 20 cm, frequency 4.0 Hz, and maximum displacement at  $t = 0$ .

**Question 3:** The position of an object moving with simple harmonic motion is given by  $x = 3 \cos(2\pi t)$ , where  $x$  is in meters and  $t$  is in seconds. Find expressions for the velocity and acceleration of the object as a function of time.