1. (a) At what position is the speed of a mass in a mass-spring system maximum (1) x = 0, (2) x = - A, or (3) x = +A? Why? (b) If, m = 0.250 kg, k = 100 N/m, and A = 0.10 m for such a system, what is the mass’s maximum speed?

**Answer: - The correct choice is (1) x = 0, (b) 2 m/s**

1. The simple pendulum in a tall clock is 0.75 m long. What are (a) the period and (b) the frequency of this pendulum?

**Answer: - (a) 1.7 s (b) 0.57 Hz**

1. The equation of motion of a SHM oscillator is x = (0.50 m) sin(2 pie f)t, where, x is in meters and t is in seconds. If the position of the oscillator is at x = 0.25 m at t = 0.25 s, what is the frequency of the oscillator?

**Answer: - 0.33 Hz**

1. Fred strikes a steel train rail with a hammer at a frequency of 2.50 Hz, and Wilma puts her ear to the rail 1 km away (a) How long after the first strike does Wilma hear the sound? (b) What is the time interval between the successive sound pulses she hears?

**Answer: - (a) 0.20 s (b) 0.40 s**

1. If the frequency of the third harmonic of the vibrating string is 600 Hz, what is the frequency of the first harmonic?

**Answer: - 200 Hz**