VIBRATORY MOTION

1.) A spring is elongated a distance d using a force F. It takes 3F to elongate the spring to a distance 2d. From that you know:

a. the spring constant is F/d
b. the spring will oscillate with Simple Harmonic Motion
c. the spring will not obey Hooke's Law.
d. none of the above

2.) A mass m is attached to a vertical spring that is then allowed to elongate to its equilibrium position. The mass is then displaced an additional distance d and released. When this is done, the mass's oscillation period is T. When the mass is elongated a distance 2d, the period becomes:

a. 2T
b. T/2
c. stays the same
d. there is not enough information to tell

3.) A mass m is attached to a vertical spring that is then allowed to elongate to its equilibrium position. The mass is then displaced an additional distance d and released. When this is done, the mass's frequency is ν. When the mass is elongated a distance 2d, the frequency becomes

a. 2ν
b. $\nu/2$
c. the same
d. there is not enough information to tell

4.) A spring cannot have a force function of $-kx^2$ because:

a. the spring force must be positive
b. the spring force must provide a restoring force, which the square won't do
c. the spring wouldn't obey Hooke's Law
d. spring must oscillate with simple harmonic motion

5.) A spring hung in the vertical has a mass attached to it. The mass is set into oscillatory motion. At some point, it passes through the equilibrium position moving downward. It passes through the equilibrium point five more times. It has moved through:

a. two cycles.
b. two and a half cycles.
c. three cycles.
d. five cycles.

6.) What is always present when oscillatory motion exists?

a. the presence of a spring
b. the presence of a point mass
c. a restoring force
d. there is no single presence

7.) The period of a simple pendulum is a function of all of the variable listed except:

a. the mass of the pendulum
b. gravity.
c. the length of the pendulum arm

8.) True or false: The period of a simple pendulum of mass m and pendulum arm length L will be greater than that of a physical pendulum of the same mass and dimension?

c, c, c, b, b, c, a, true