**Further problems relating to covered chapter 13 material.**

1. A mass on a spring oscillates with a maximum amplitude of 10 cm and a period of 2.0 s. Find its maximum velocity.

   a) .50 m/s b) 1.0 m/s c) .31 m/s d) .20 m/s e) 2.0 m/s

2. A mass on a spring with spring constant 1.0 N/m oscillates with a maximum amplitude of 10 cm and a period of 2.0 s. Find its maximum kinetic energy.

   a) 2.0 J b) .50 J c) 50 J d) 20 J e) $5.0\times10^{-3}$ J

3. A 10 kg mass on a spring oscillates with a maximum amplitude of 10 cm and a period of 2.0 s. Find the spring constant.

   a) 2.0 N/m b) 20 N/m c) 50 N/m d) 100 N/m e) 200 N/m

4. A mass on a spring oscillates with a maximum amplitude of 10 cm and a period of 2.0 s. Find its maximum acceleration.

   a) 2.0 $m/s^2$ b) .02 $m/s^2$ c) 1.0 $m/s^2$ d) .50 $m/s^2$ e) .31 $m/s^2$

5. A pendulum has a period of 1.0 s on Earth. What will its period be on the Moon where the mass of the bob will have a weight one sixth its weight on Earth?

   a) 1.0 s b) 2.4 s c) 6.0 s d) .17 s e) .41 s

6. The acceleration due to gravity on the surface of Mars is 3.7 $m/s^2$. What length pendulum will have a period of 2.0 s there?

   a) 3.7 m b) .37 m c) 1.0 m d) 2.7 m e) .27 m

7. A piece of rubber 100 m long, with a cross sectional area of 1.00 $cm^2$ and Young's modulus $7.00\times10^6$ N/m is hung from a very tall tower. When a mass, *m*, is suspended from it, the length of the piece of rubber increases by 1.00 m. The suspended mass is set in vertical oscillation with an amplitude of 1.00 cm and a period of 2.00 s. What is the value of *m*?

   a) 280 gm b) 710 gm c) 4.46 kg d) 28.0 kg e) 71.0 kg