UNIT 14 EXERCISES

1) An ideal spring has a spring constant k = 25N/m and is suspended vertically. A 1.0kg object is attached to the unstretched spring and released. It then performs oscillations.

(i) What is the magnitude of the acceleration of the body when the extension if the spring is a maximum? Show your work.

(ii) What is the maximum extension of the spring.

2) A ball dropped from a height of 4.00m makes a perfectly elaxtic collision with the ground. Assuming that no energy is lost due to air resistance,

(i) show that the motion is periodic

(ii) and determine the period of the motion. Explain your reasoning.

(iii) is the motion simple harmonic? Explain.

3) A 0.321kg mass is attached to a spring with a force constant of 12.3N/m. If the mass is displaced 0.256m from equilibrium and released, what is its speed when it is 0.128m from equilibrium? Show your work.