2 (a) State, by reference to simple harmonic motion, what is meant by *angular frequency*.

....

.... [1]

(b) A thin metal strip is clamped at one end so that it is horizontal.
A load of mass *M* is attached to its free end. The load causes a displacement *s* of the end of the strip, as shown in Fig. 2.1.
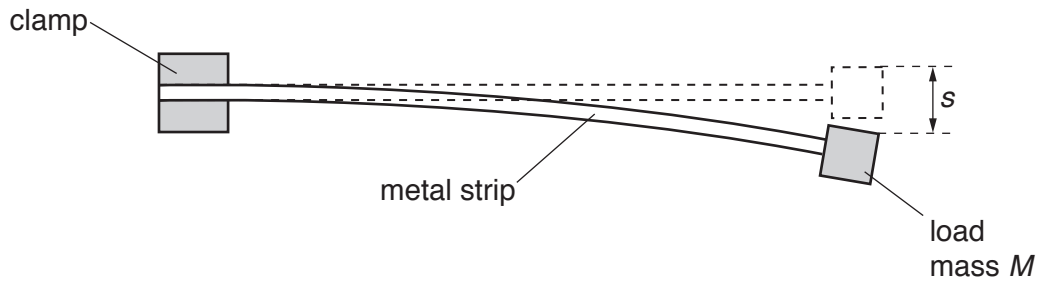

Fig. 2.1

The load is displaced vertically and then released. The load oscillates.
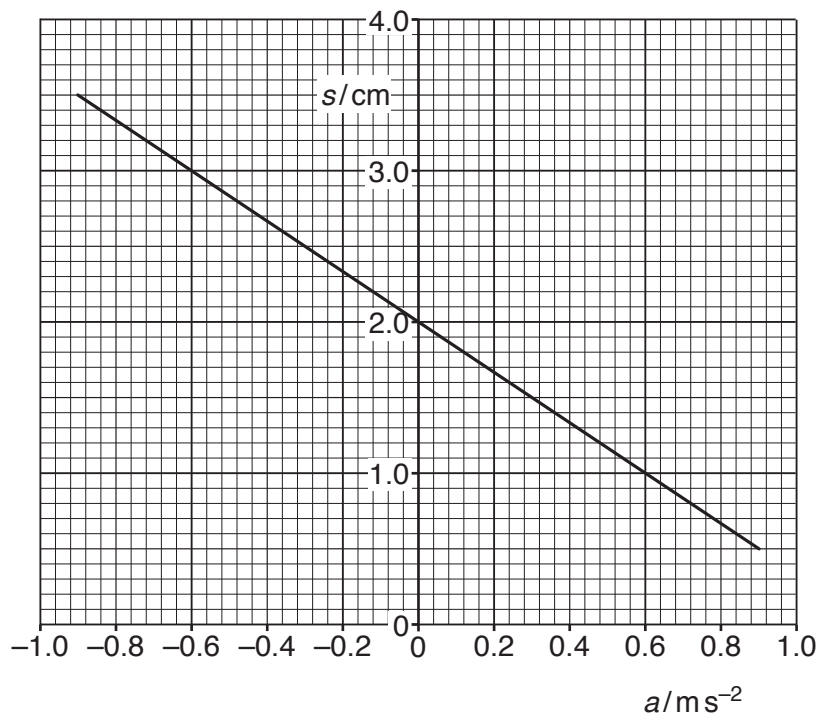The variation with the acceleration *a* of the displacement *s* of the load is shown in Fig. 2.2.

Fig. 2.2

(i) Use Fig. 2.2 to determine

    1.   the displacement of the load before it is made to oscillate,

displacement = ... cm

    2.   the amplitude of the oscillations of the load.

amplitude = ... cm

[2]

(ii) Show that the load is undergoing simple harmonic motion.

....

....

....

.... [3]

(iii) Calculate the frequency of oscillation of the load.

frequency = ... Hz [3]

[Total: 9]