5 A cuboidal block floats in a liquid with its base horizontal, as shown in Fig. 5.1.

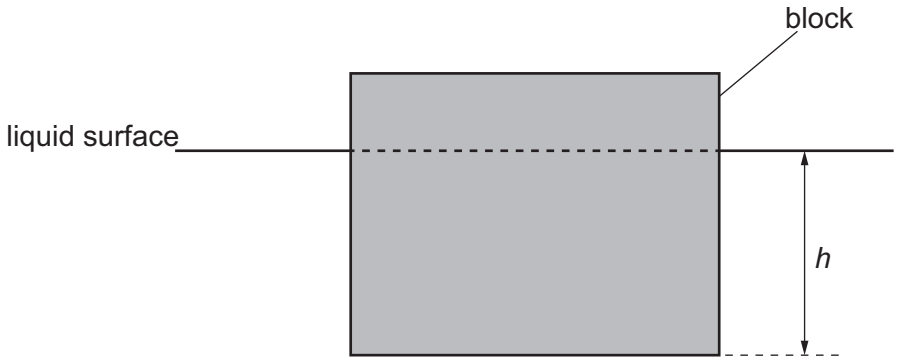

Fig. 5.1

The base of the block is at a depth h below the surface of the liquid.

The block is displaced downwards by a small distance and then released so that it oscillates.

Fig. 5.2 shows the variation with h of the acceleration a of the block.

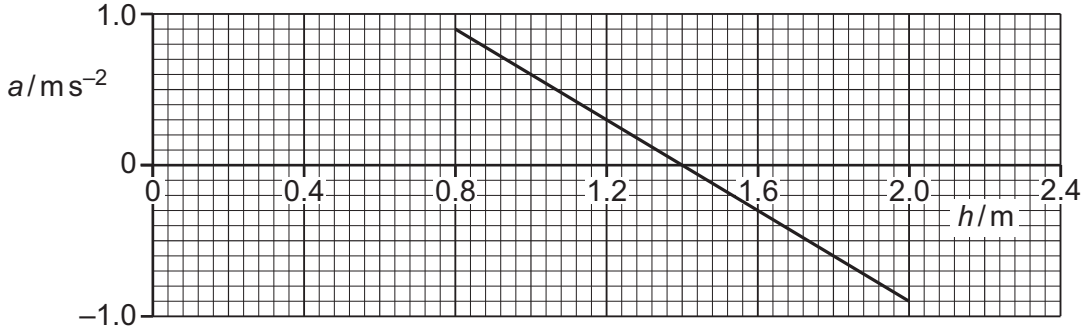

Fig. 5.2

Fig. 5.3 shows the variation with h of the kinetic energy E_K of the block.

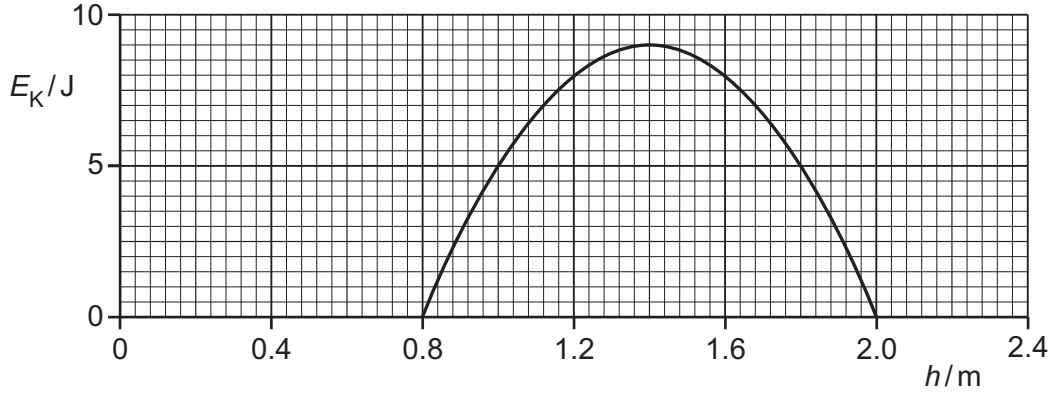

Fig. 5.3

(a) **(i)** Determine the amplitude of the oscillations.

amplitude = ... m [1]

(ii) State what the line in Fig. 5.2 shows about the nature of the oscillations.

..... [1]

(b) State **three** other quantitative conclusions that can be drawn from Fig. 5.2 and Fig. 5.3 about the block and its oscillations. Use the space for any working.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) On Fig. 5.4, sketch the variation with h of the potential energy E_P of the oscillations.

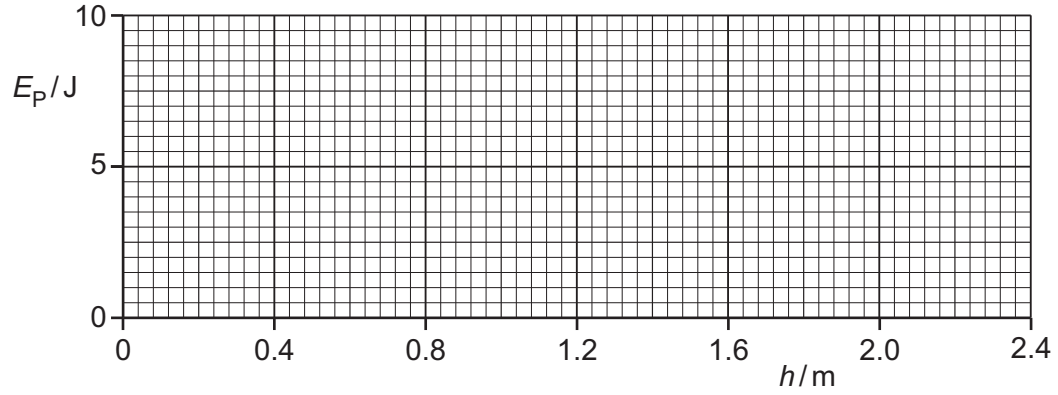

Fig. 5.4

[3]

[Total: 8]