

GCSE Physics A (Gateway)
J249/02 Physics A P5-P8 and P9 (Foundation Tier)

Question Set 13

1 (a) Fig. 1.1 is a graph of a wave.

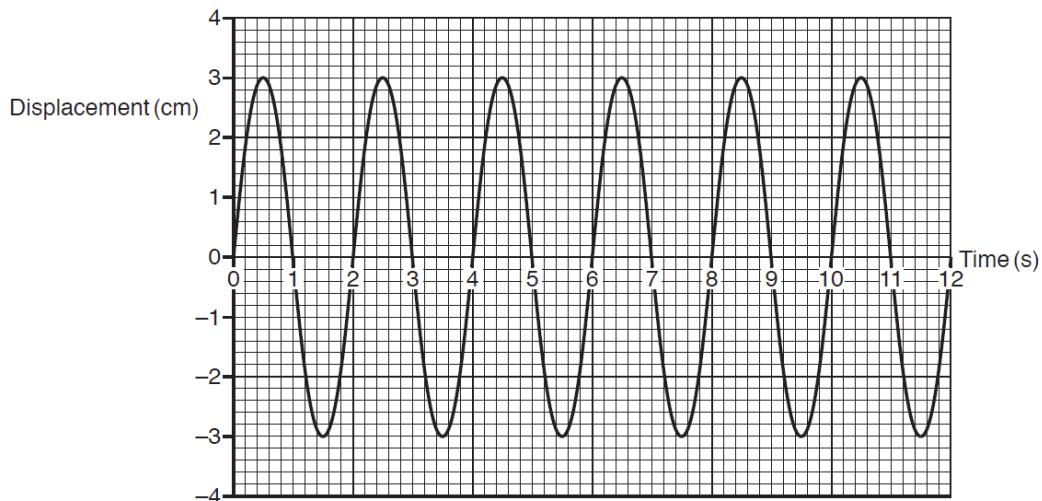


Fig. 1.1

(i) Use the graph in Fig. 1.1 to work out the time period of the wave.

Time period of the wave = 2 s

[1]

(ii) Use the graph in Fig. 1.1 to work out the amplitude of the wave.

Amplitude = 3 cm

[1]

(iii) The frequency of the wave in Fig. 1.1 is 0.5 Hz.

What is meant by the term **frequency**?

The number of oscillations per second.

[1]

(ii) Use the graph in Fig. 1.1 to work out the amplitude of the wave.

Amplitude = 3 cm

[1]

(b) A water wave has a frequency of 0.25 Hz and a wavelength of 6.0 m.

Calculate the speed of the wave.

$$v = f\lambda$$

$$v = 0.25 \times 6$$

$$v = 1.5 \text{ m s}^{-1}$$

Speed of the wave = 1.5 m/s

[1]

(c) Surface water waves can be modelled using a slinky spring.

A student holds one end of the spring on a table. The other end is fixed to a wall.

Fig. 1.2 shows the spring viewed from above the table.

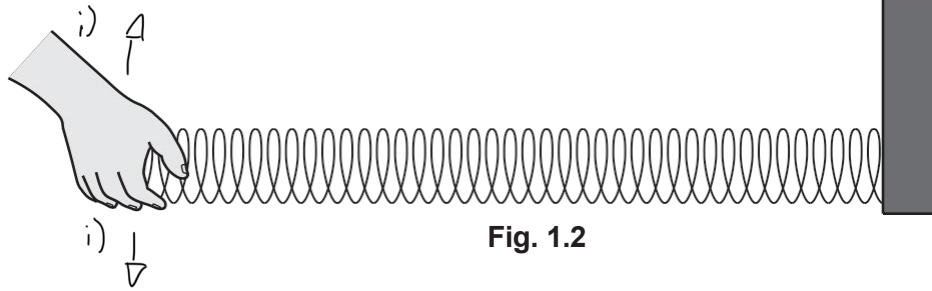


Fig. 1.2

- (i) Draw two arrows **on the diagram** in Fig. 1.2 to show the movement of the student's hand when he makes a transverse wave. [1]
- (ii) Describe what happens to the **transverse** wave at the wall. [1]
It reflects and inverts.
- (iii) In Fig. 1.3 the student stops moving his hand.

This is what the coils in the spring look like after a short time:

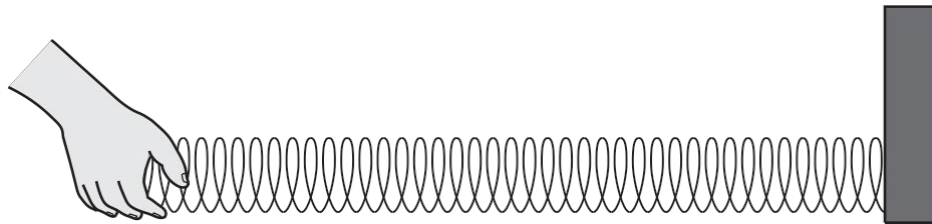


Fig. 1.3

This model of a water wave shows that the wave travels **not** the water.

Explain why. The coils represent the water. Fig 1.3 shows the coils in their original position thereby showing that the water doesn't move the wave does. [1]

Total Marks for Question Set 13: 9

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