General Wave Properties – 2022 June O Level 5054

1. June/2022/Paper_11/No.19

A wave in the sea collides with a cliff.

A crest of the wave hits the cliff once every 6.0 s.

The horizontal distance between a crest and the adjacent trough of the wave is 4.5 m.

What is the speed of the wave?

A 0.67 m/s **B** 0.75 m/s **C** 1.3 m/s **D** 1.5 m/s

2. June/2022/Paper_22/No.8(a, b ,c)

(a) Fig. 8.1 shows a ripple tank and the crests of the water wave that is produced in it.

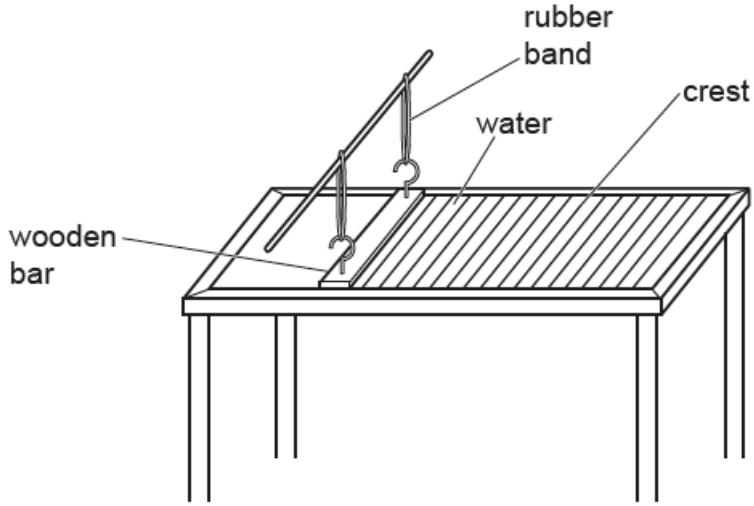

Fig. 8.1

The frequency of the water wave is 2.0 Hz and its amplitude is 3.0 mm.

(i) Calculate the number of crests produced in 1.5 s.

number = ... [1]

(ii) The height of the wave is measured from the level of the undisturbed surface of the water. The height of the wave at one point is 0 at time = 0.

On Fig. 8.2, draw a graph to show how the height of the wave at this point varies with time.

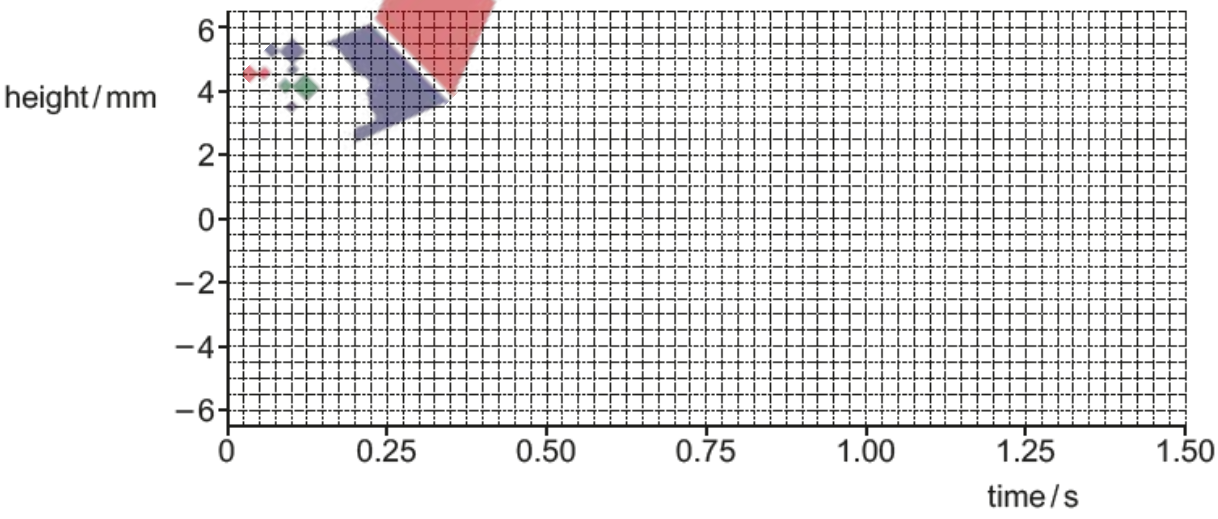

Fig. 8.2

[2]

(b) **(i)** The frequency of the wave is increased.

Describe how the apparatus shown in Fig. 8.1 is adjusted so that the frequency of the wave is increased.

.....

..... [1]

(ii) State what happens to the speed and wavelength of the wave as the frequency increases.

speed .....

wavelength .....

[2]

(c) The apparatus shown in Fig. 8.1 can be used to demonstrate refraction.

(i) State the additional apparatus needed to demonstrate refraction.

..... [1]

(ii) Draw on Fig. 8.3 to show the refraction of the water wave.

Label a boundary where the refraction occurs.

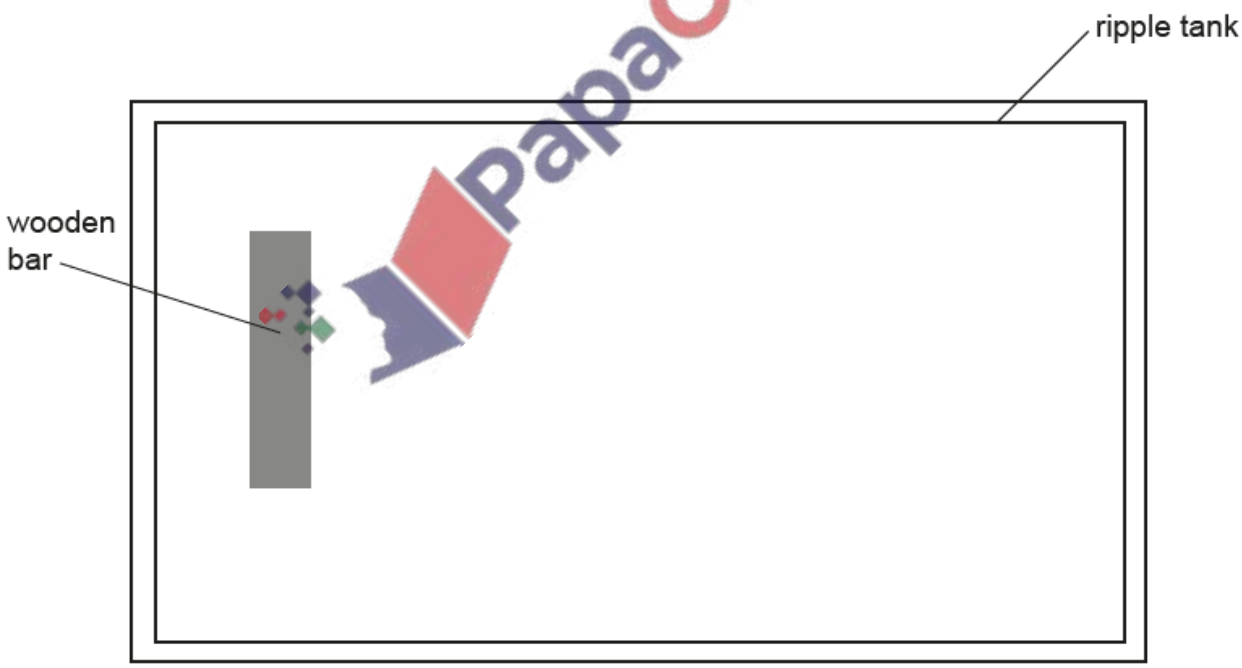

Fig. 8.3

[3]