General Properties of Waves

Question Paper

Course	CIE IGCSE Physics
Section	3. Waves
Topic	General Properties of Waves
Difficulty	Easy

Time Allowed 50

Score /39

Percentage /100

Question 1

Light and sound both travel as waves.

Draw a line from each statement to the correct term that describes it. One has been done for you.

statement	term
change in direction of light when entering a medium	amplitude
very high frequency sounds	dispersion
a glass prism producing a spectrum	diffraction
light spreading after passing through a narrow gap	echo
sound reflecting from a wall	longitudinal
seven colours of light	refraction
	spectrum
	ultrasound

[5 marks]

Question 2a

A ray of light refracts as it travels from air into glass, as shown in Fig.7.1.

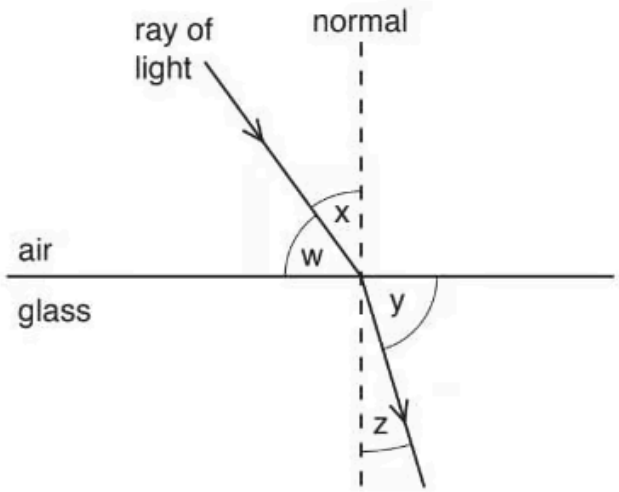


Fig. 7.1

(i) State which angle w, x, y or z, is the angle of refraction.

[1]

(ii) Light is a transverse wave.
State another example of a transverse wave.

[1]

[2 marks]

Question 2b

Fig.7.2 represents some wavefronts approaching a barrier with a narrow gap.

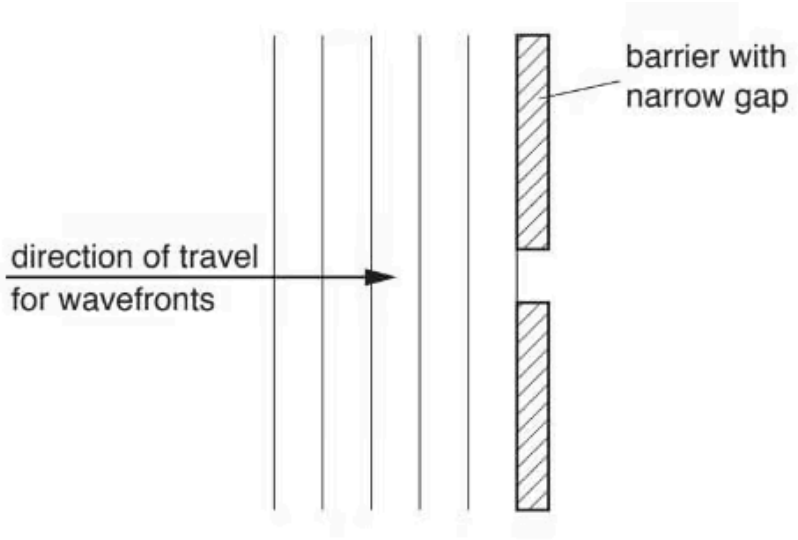


Fig. 7.2

(i) On Fig.7.2, draw three wavefronts that have passed through the gap.

[2]

(ii) State the name of the effect in **(b)(i)**.

[1]

[3 marks]

Question 3a

Fig. 8.1 represents the pressure at one instant along part of a sound wave.

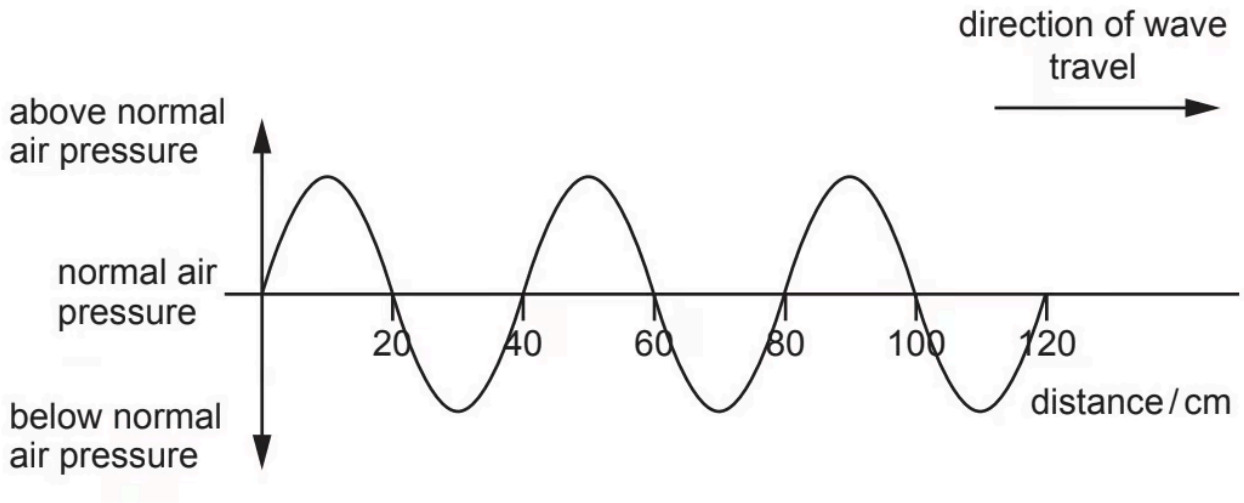


Fig. 8.1

(i) Determine the wavelength of the sound wave.

wavelength of the sound wave = ... cm [1]

(ii) On Fig. 8.1, draw a wave representing a louder sound of the same wavelength.

[1]

[2 marks]

Question 3b

State the range of audible frequencies for a healthy human ear. Include the unit.

[2 marks]

Question 4a

Complete the sentence which describes all waves.

Waves transfer _____ **without** transferring _____

[2 marks]

Question 4b

Select suitable labels for Fig. 1 by selecting from the list below.

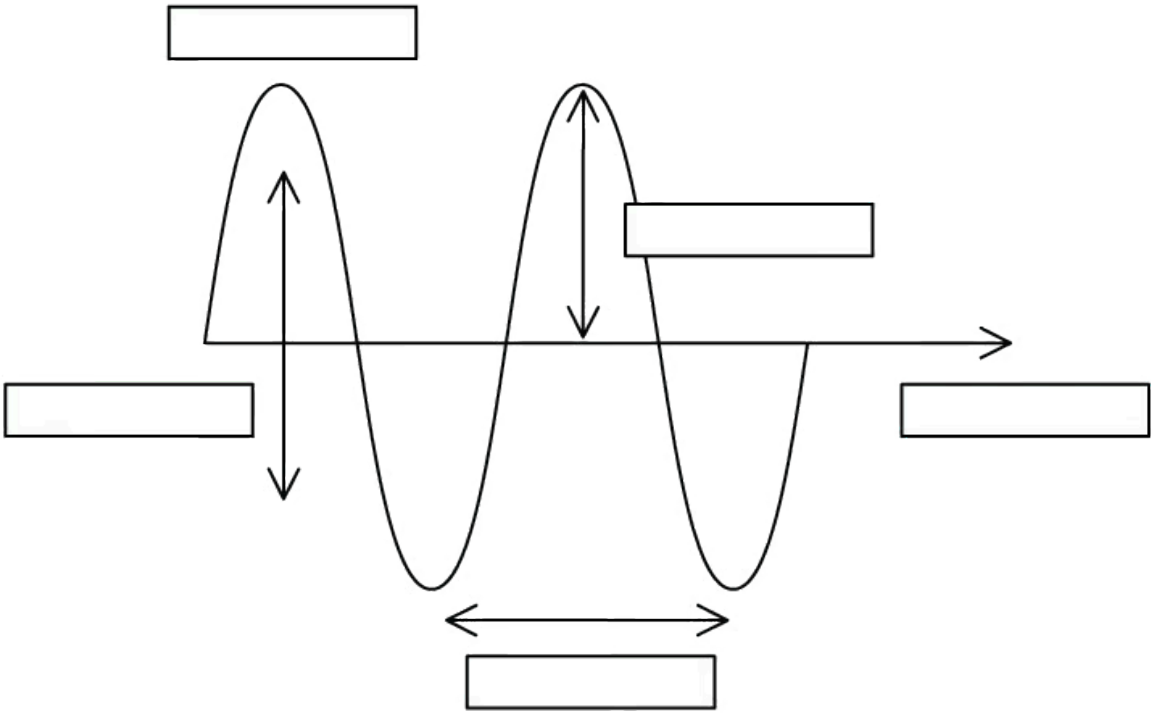


Fig. 1

amplitude
crest
direction of oscillation
direction of travel of wave
frequency
time period
trough
wavelength

[5 marks]

Question 4c

For two of the quantities in the previous answer, state the correct unit for

(i) Amplitude.

[1]

(ii) Wavelength.

[1]

[2 marks]

Question 4d

A wave on a rope has a speed of 0.25 m/s and a time period of 2 seconds.

Calculate

(i) The frequency of the wave.

[2]

(ii) The wavelength of the wave.

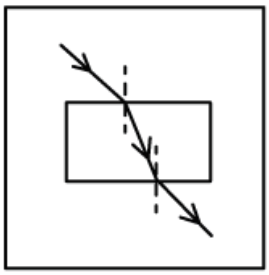
[3]

[5 marks]

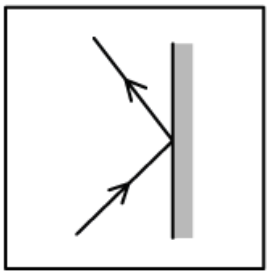
Question 5a

For each label draw a straight line connecting it to the correct diagram.

Diffraction



Reflection



Refraction

[3 marks]

Question 5b

A wave of light is passing from air into a clear plastic prism. The wave is refracted.

State two changes which would make the angle of refraction increase.

[2 marks]

Question 5c

Extended tier only

A water wave is passing through a gap and being diffracted.

State two changes which would make the amount of diffraction decrease.

[2 marks]

Question 5d

Extended tier only

Fig. 1.1 shows a water wave meeting a barrier.

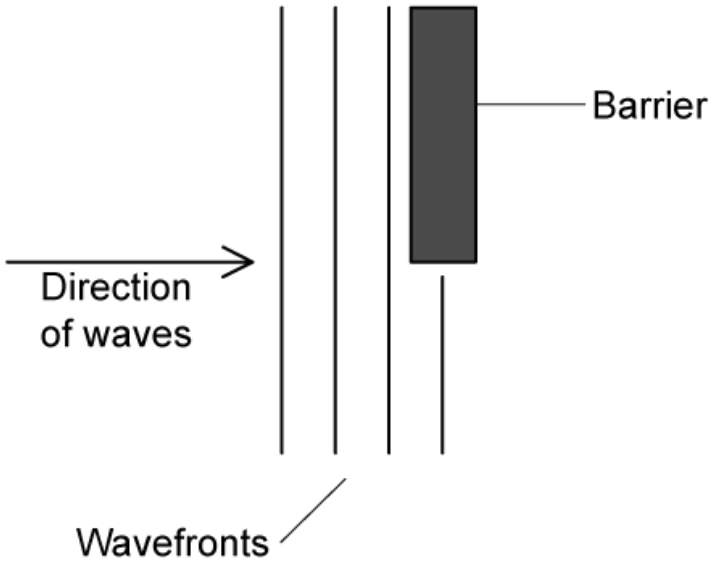


Fig 1.1

Complete the diagram to show the waves after they have passed the barrier.

[4 marks]