Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 4_ Waves

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

Figure 5 shows how a glass prism is used to produce a spectrum from a beam of sunlight.

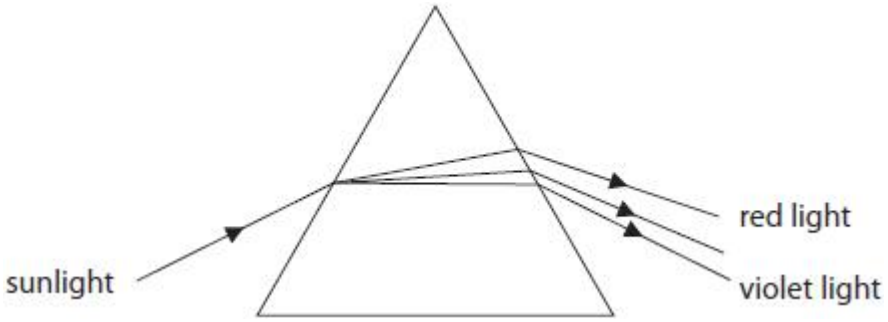


Figure 5

(i) Explain, in terms of refraction and wavelength, the paths taken by the light through the prism.

(3)

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(ii) Describe how a student could develop the procedure shown in Figure 5 to search for evidence that sunlight consists of additional electromagnetic waves with frequencies lower than visible light.

(2)

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(Total for question = 5 marks)

Q2.

Sound travels slower in cold air than it does in warm air.

The equation relating the speed of sound in air to the density of the air is

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$$\text{speed of sound} = \frac{K}{\sqrt{(\text{density})}} \qquad \text{where K is a constant.}$$

The table in Figure 7 gives some data about the speed of sound in air and the density of air.

	speed of sound in m/s	density of air in kg / m³
in cold air	331	1.29
in warm air		1.16

Figure 7

Use the equation and the data in the table in Figure 7 to calculate the speed of sound in warm air.

Give your answer to an appropriate number of significant figures.

(3)

speed of sound in warm air = ... m/s

(Total for question = 3 marks)

Q3.

Figure 1 is a diagram of a water wave.

A cork is floating on the water.

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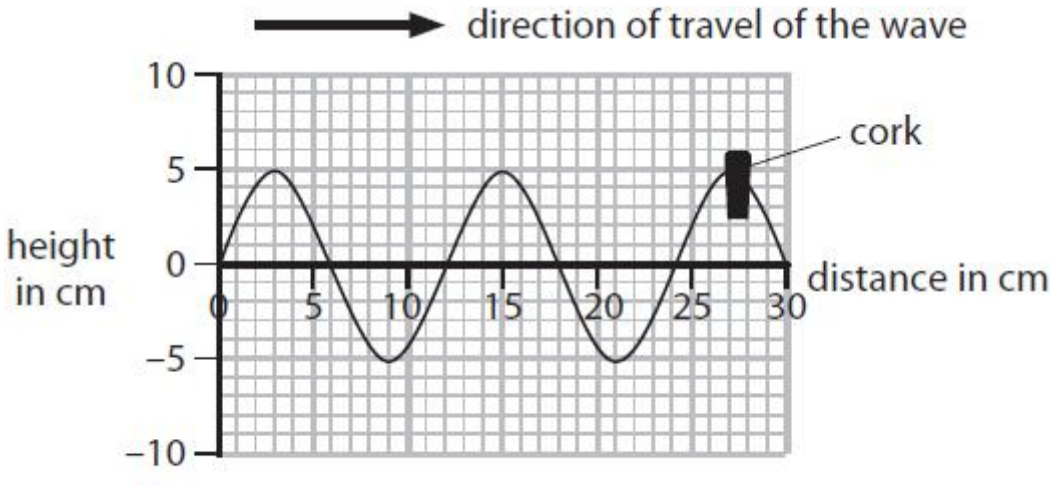


Figure 1

(i) Use the scale on the diagram to measure the wavelength of the wave.

(2)

wavelength = ... cm

(ii) Describe the motion of the cork.

You should include how the cork moves relative to the direction of travel of the wave.

(2)

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(Total for question = 4 marks)

Q4.

Figure 7 shows a tuning fork.

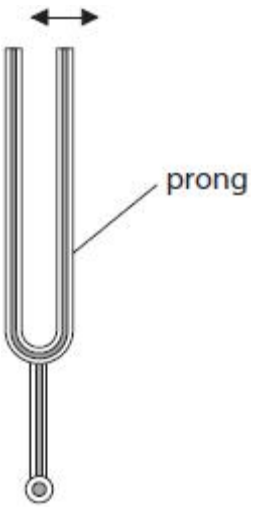


Figure 7

When the prongs of the tuning fork are struck, the prongs vibrate in the directions shown by the arrows on Figure

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7.

Describe how the vibrating tuning fork causes a sound wave to travel through the air.

You may add to the diagram if it helps your answer.

(2)

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(Total for question = 2 marks)

Q5.

(i) Figure 2 shows a student sitting on the shore of a lake watching ripples on the surface of the water moving past a toy boat.

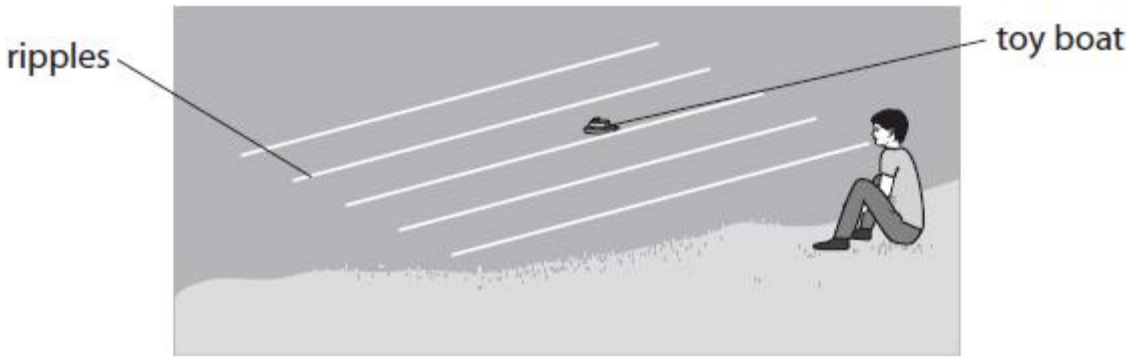


Figure 2

The student has a stopwatch.
Describe how the student could determine the frequency of the ripples on the lake.

(3)

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(ii) The speed of a water wave is 1.5 m/s.

The frequency of the wave is 0.70 Hz.
Calculate the wavelength of this wave.
Use the equation

$$v = f \times \lambda$$

(2)

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wavelength = ... m

(iii) Water waves are transverse waves.

Describe the difference between transverse waves and longitudinal waves.

(2)

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(Total for question = 7 marks)

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