Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Waves (Low Demand Questions)

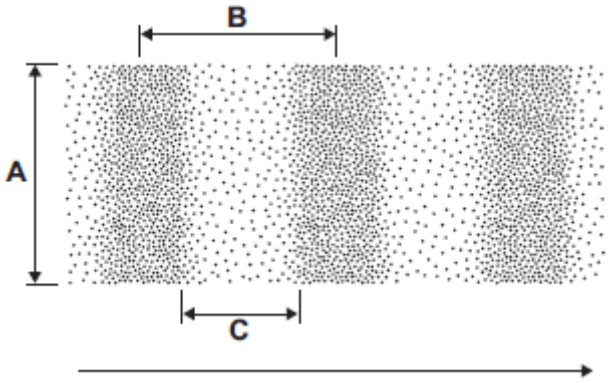
Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Q1.

Sound waves are mechanical waves.

The diagram shows the disturbance of air particles in the path of a sound wave at an instant in time.



(a) (i) Which labelled arrow, **A**, **B** or **C**, correctly identifies the wavelength of the sound wave?

Arrow: _____

(1)

(ii) What type of wave is a sound wave?

Draw a ring around the correct answer.

electromagnetic **longitudinal** **transverse**

(1)

(b) Two students investigate the reflection of sound waves from a building.

One student hits two metal bars together to produce a sound wave.

The second student starts a stop clock when the metal bars are hit together and stops the stop clock when she hears the echo.

The students want to calculate the time it takes the sound wave to travel to the building.

(i) Why must the students divide the time on the stop clock by 2 to calculate the time it takes the sound wave to travel to the building?

_____

_____

(1)

(ii) The students divide each time by 2 and record their results in a table.

	Trial 1	**Trial 2**	**Trial 3**	**Mean**
Time in seconds	0.33	0.27	0.30	

Calculate the mean of the 3 results.

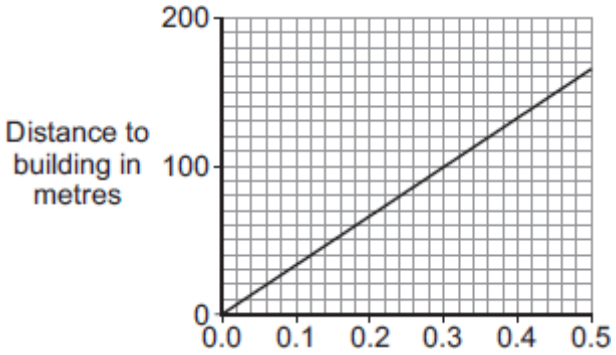
Write the mean in the table.

_____

_____

(2)

(iii) The time taken for the sound wave to reach the building, from different distances, is shown in the graph.



Use the mean time from the table to determine the distance to the building.

_____

Distance = _____ m

(1)

(iv) The students see differences between the results.
Choose **one** improvement the students could make to the investigation.
Tick (✓) **one** box.

Improvement	**Tick (✓)**
Decrease the distance between the students and the building.	
Use a sound sensor and a datalogger to measure the time.	

Play a long note on a musical instrument instead of using metal bars.	

(1)

(v) The students listen to the echo. The echo is quieter than the sound heard when the metal bars are hit together.

How does the amplitude of the echo compare with the amplitude of the sound wave produced by the metal bars?

_____

_____

(1)

(Total 8 marks)

Q2.

Electromagnetic waves form a continuous spectrum.

Three parts of the electromagnetic spectrum are:

- gamma rays
- infrared
- visible light.

(a) Place the parts in order of increasing energy.

Increasing energy

_____ _____ _____

(2)

(b) The parts of the electromagnetic spectrum all have different properties.

Draw a ring around the correct answer to complete each sentence.

(i) The number of waves passing a point in 1 second is called the

frequency.
speed.
wavelength.

(1)

(ii) All parts of the electromagnetic spectrum travel at the same speed

through

a vacuum.
glass.
water.

(1)

(c) The different parts of the electromagnetic spectrum are used for different methods of communication.

Complete the table by giving an example of a use of each part of the electromagnetic spectrum for communication.

Part of electromagnetic spectrum	Use for communication
Infrared	
Microwave	
Radio wave	
Visible light	

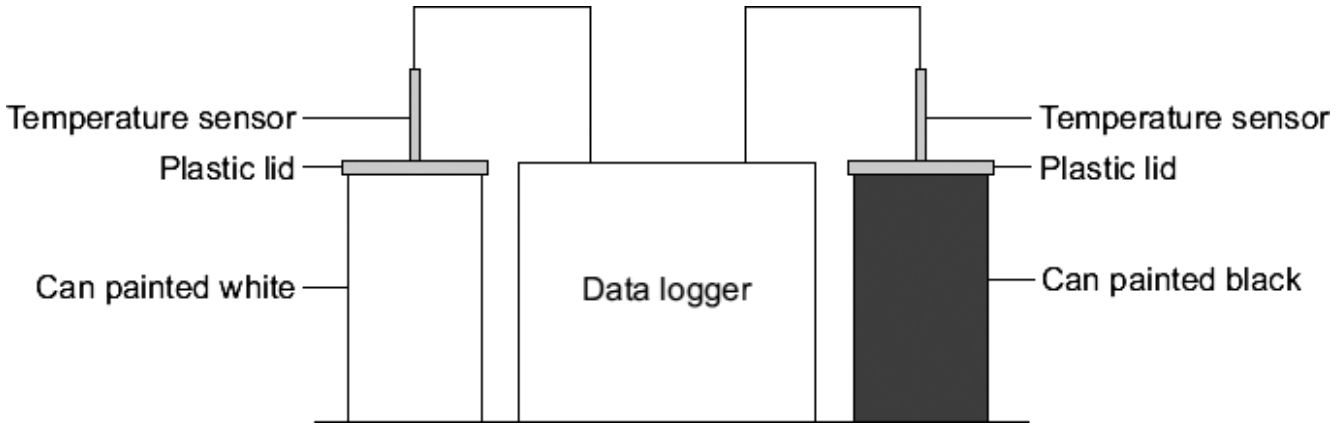
(4)

(Total 8 marks)

Q3.

A student investigated the emission of infrared radiation from two cans.

- The two cans were the same size.
- One can was painted white and the other can was painted black.
- The student poured the same volume of boiling water into each can.
- A data logger recorded the temperature in each can for the next 14 minutes.



(a) Draw a ring around the correct answer in the box to complete the sentence.

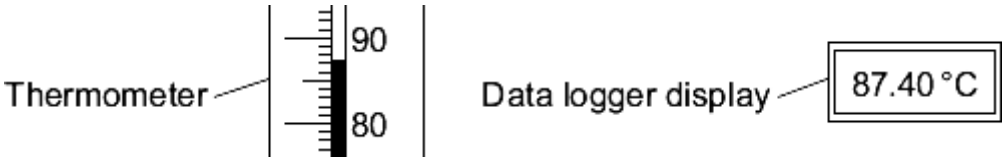
The plastic lids prevent energy loss by

conduction.
convection.
infrared radiation.

(1)

(b) The data logger takes two temperature readings each second, and then plots a graph for the student.

The student could have used a thermometer to measure the temperature.



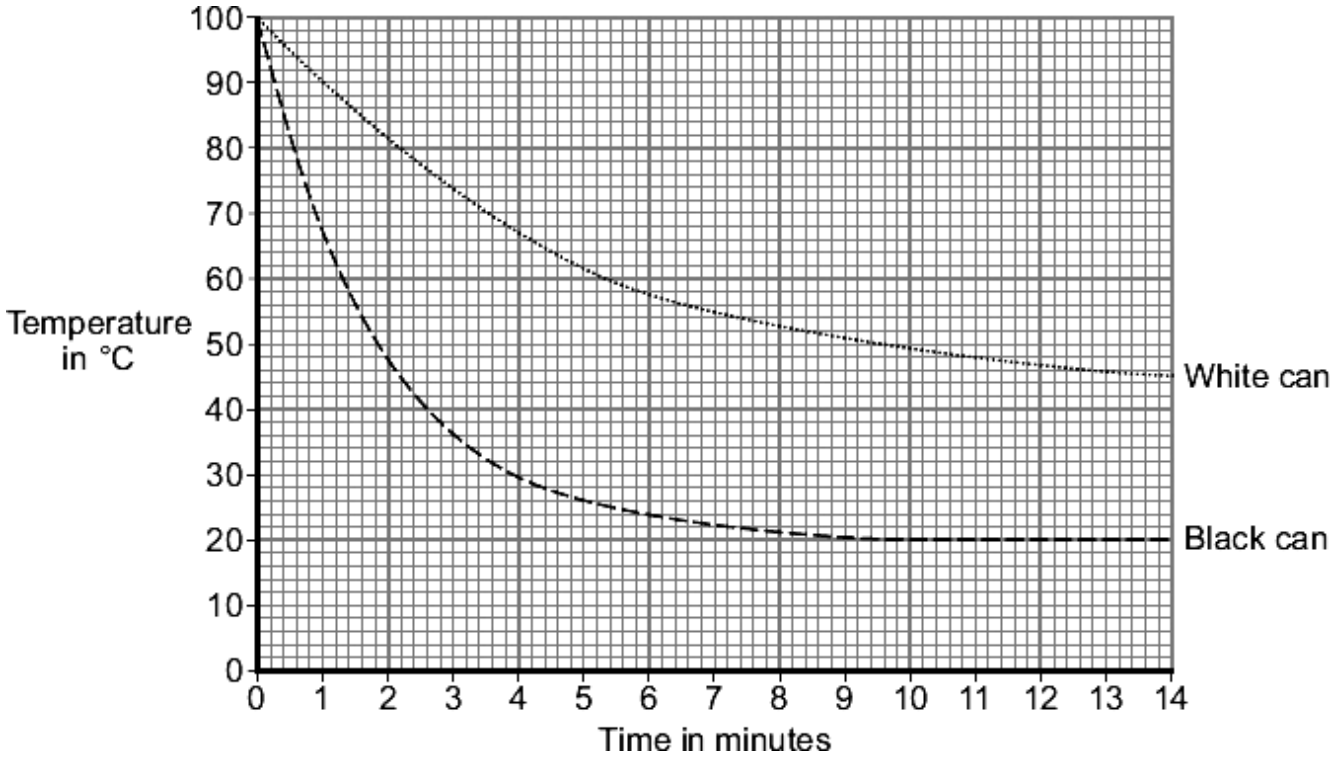
Give **two advantages** of using a data logger instead of the thermometer

1. _____

2. _____

(2)

(c) The graph shows the student's results.



(i) Explain the difference in temperature between the water in the two cans after 14 minutes.

_____

_____

_____

_____

(2)

(ii) The student decided to repeat the investigation using a can painted grey.

On the graph, draw a line for the results you would expect for the can painted grey.

(2)

(Total 7 marks)