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

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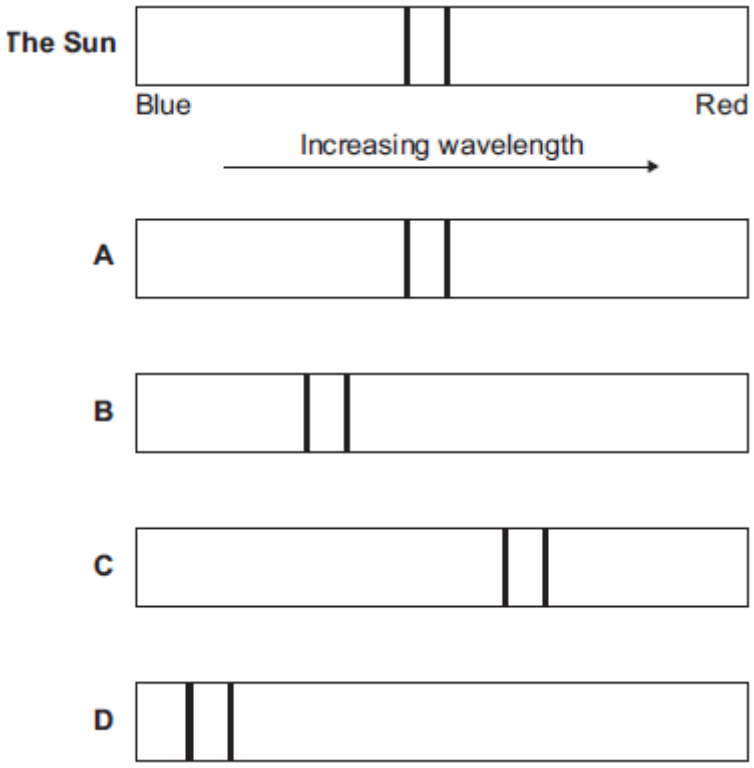
Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

Scientists can use the visible light spectrum from distant stars to determine whether the stars are moving.

The visible light spectrum from stars includes dark lines at specific wavelengths.

(a) The diagram shows the visible light spectrum from the Sun and from four other stars, **A**, **B**, **C** and **D**.



(i) Which star, **A**, **B**, **C** or **D**, is moving away from the Earth? ☐

(1)

(ii) How does the speed of star **B** compare with the speed of star **D**?

Tick (✓) **one** box.

Tick (✓)

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The speed of star **B** is greater than the speed of star **D**.	
The speed of star **B** is less than the speed of star **D**.	
The speed of star **B** is the same as the speed of star **D**.	

(1)

(b) A radio wave is emitted by a star.
The radio wave has a wavelength of 1500 m and a frequency of 200 000 Hz.

Calculate the speed of this radio wave.

Choose the correct unit from the list below.

m **m/s** **m/s^2**

_____

_____

_____

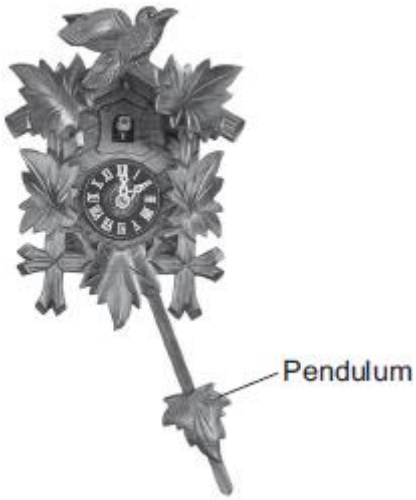
Speed = _____ unit _____

(3)
(Total 5 marks)

Q2.

The clock shown in **Figure 1** uses a pendulum to keep time.

Figure 1



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(a) The pendulum has a frequency of 0.80 Hz.

Calculate the periodic time of the pendulum.

_____

_____

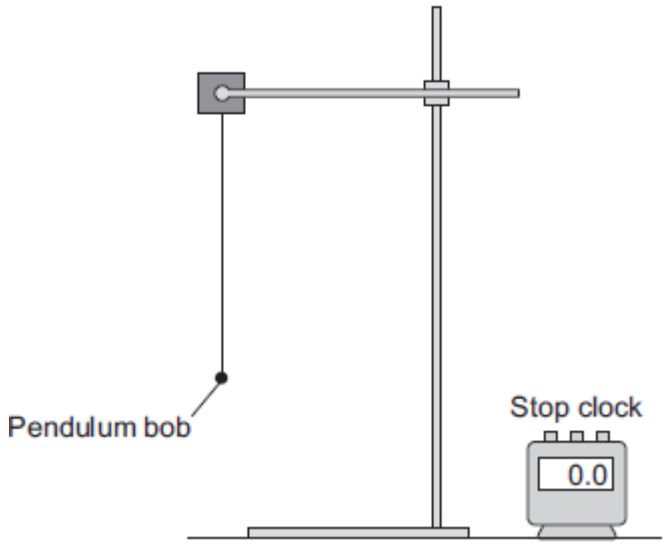
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Periodic time = _____ seconds

(2)

(b) A student investigated the factors affecting the oscillation of a pendulum. The student set up a pendulum as shown in **Figure 2**.

Figure 2



The student investigated how many complete oscillations the pendulum made for different lengths of the pendulum and different masses of the pendulum bob.

The results are shown in the table.

Length of the pendulum in millimetres	**Mass of the pendulum bob in grams**	**Number of complete oscillations made by the pendulum in 20 seconds**
200	100	22
200	200	22
400	100	15
400	200	15
600	50	13
600	100	13

(i) State **two** conclusions that the student should make from the results shown in the table.

1. _____

_____

2. _____

_____

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(2)

(ii) The student wants to be more certain that her conclusions are correct.

Suggest **two** ways in which the investigation could be improved.

1. _____

_____

2. _____

_____

(2)

(Total 6 marks)

Q3.

A note was played on an electric keyboard.

The frequency of the note was 440 Hz.

(a) (i) What does a frequency of 440 Hz mean?

_____

_____

(1)

(ii) The sound waves produced by the keyboard travel at a speed of 340 m / s.

Calculate the wavelength of the note.

Give your answer to **three** significant figures.

_____

_____

_____

Wavelength = _____ metres

(3)

(b) **Figure 1** shows a microphone connected to a cathode ray oscilloscope (CRO) being used to detect the note produced by the keyboard.

Figure 1

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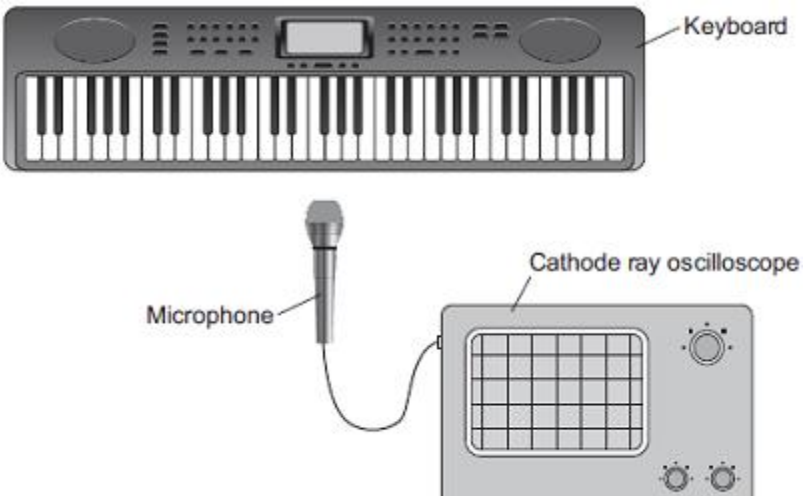
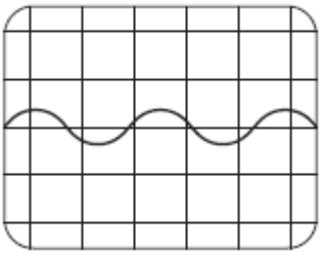


Figure 2 shows the trace produced by the sound wave on the CRO.

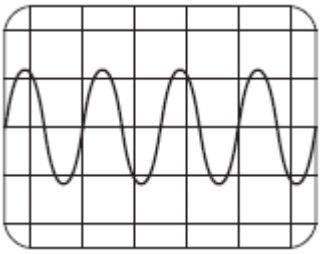
Figure 2



A second note, of different wavelength, was played on the keyboard.

Figure 3 shows the trace produced by the sound wave of the second note on the CRO.

Figure 3



The settings on the CRO were unchanged.

What **two** conclusions should be made about the **second** sound wave produced by the keyboard compared with the **first** sound wave?

Give a reason for each conclusion.

Conclusion 1 _____

_____

Reason _____

_____

Conclusion 2 _____

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_____

Reason _____

_____

(4)

(Total 8 marks)

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