



General Certificate of Secondary Education  
2010–2011

**Science: Single Award (Modular)**  
Electricity, Waves and Communication  
Module 5

Foundation Tier

[GSC51]

THURSDAY 24 FEBRUARY 2011, MORNING

Centre Number

71

Candidate Number



**TIME**

45 minutes.

**INSTRUCTIONS TO CANDIDATES**

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.  
Write your answers in the spaces provided in this question paper.  
Answer **all six** questions.

**INFORMATION FOR CANDIDATES**

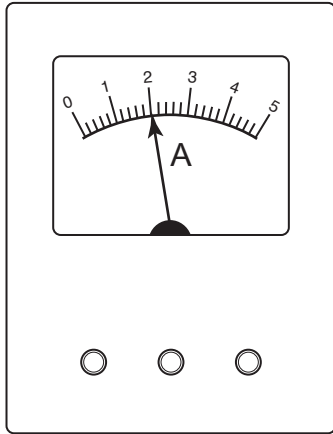
The total mark for this paper is 45.  
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	

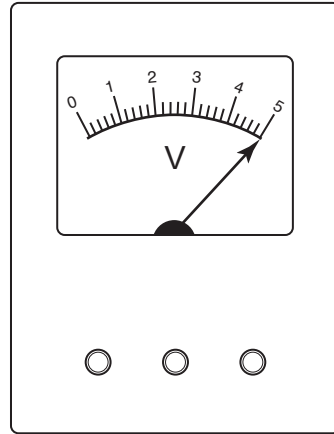
<b>Total Marks</b>	
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1 The diagrams below show two different electrical meters (A and B).



**A**



**B**

(a) For each meter (**A** and **B**) state the type of meter and the reading shown on it.

(i) **Meter A**

Type \_\_\_\_\_ [1]

Reading \_\_\_\_\_ A [1]

(ii) **Meter B**

Type \_\_\_\_\_ [1]

Reading \_\_\_\_\_ V [1]

Examiner Only	
Marks	Remark



- 2 (a) Below are features of waves and their descriptions. Using lines, match each feature with the correct description.

Feature	Description
Amplitude	Length of one complete wave
Wavelength	The height of a wave
Frequency	A reflected sound wave
	Number of vibrations per second

[3]

- (b) Complete the following sentences.

Choose from:

**audible**      **ultrasound**      **noise**      **frequency**

Humans can hear sounds with a \_\_\_\_\_ between 20 Hz and 20 kHz. This is called the \_\_\_\_\_ range.

Unwanted sound or sound that is too loud is called \_\_\_\_\_. [3]

- (c) Give two factors which can affect our hearing.

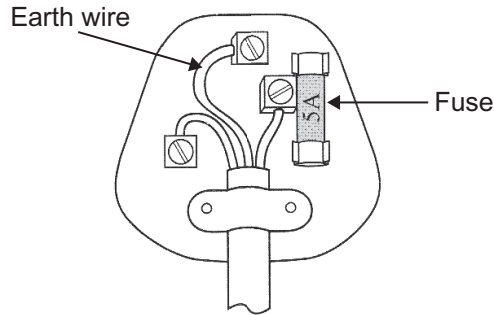
1. \_\_\_\_\_
2. \_\_\_\_\_ [2]

- (d) Suggest **one** way we can protect ourselves against hearing damage.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

3 The diagram below shows a plug used on an electrical appliance.



(a) Why has an earth wire been connected?

Choose from:

**gives more power : for double insulation : for safety**

\_\_\_\_\_ [1]

(b) Which of the following statements about fuses is **not** true?

- A fuse breaks the circuit when there is a fault.
- A fuse should be connected to the earth wire.
- A fuse melts if the current becomes too high.

\_\_\_\_\_ [1]

(c) The plug has a 5 A fuse but the appliance uses a maximum of 6 A in normal use. Complete the following sentence.

Choose from:

**too high : correct : too small**

The value of the fuse is \_\_\_\_\_ [1]

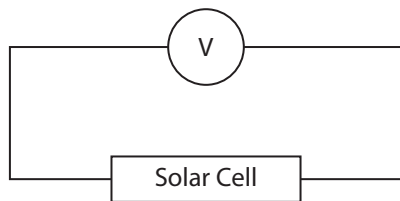
(d) Complete the table to give the missing name and colour of the wires inside the plug.

Name	Colour
Earth	Green + Yellow
Neutral	
	Brown

[2]

Examiner Only	
Marks	Remark

- 4 (a) To investigate the electricity produced by a solar cell pupils set up the following circuit.

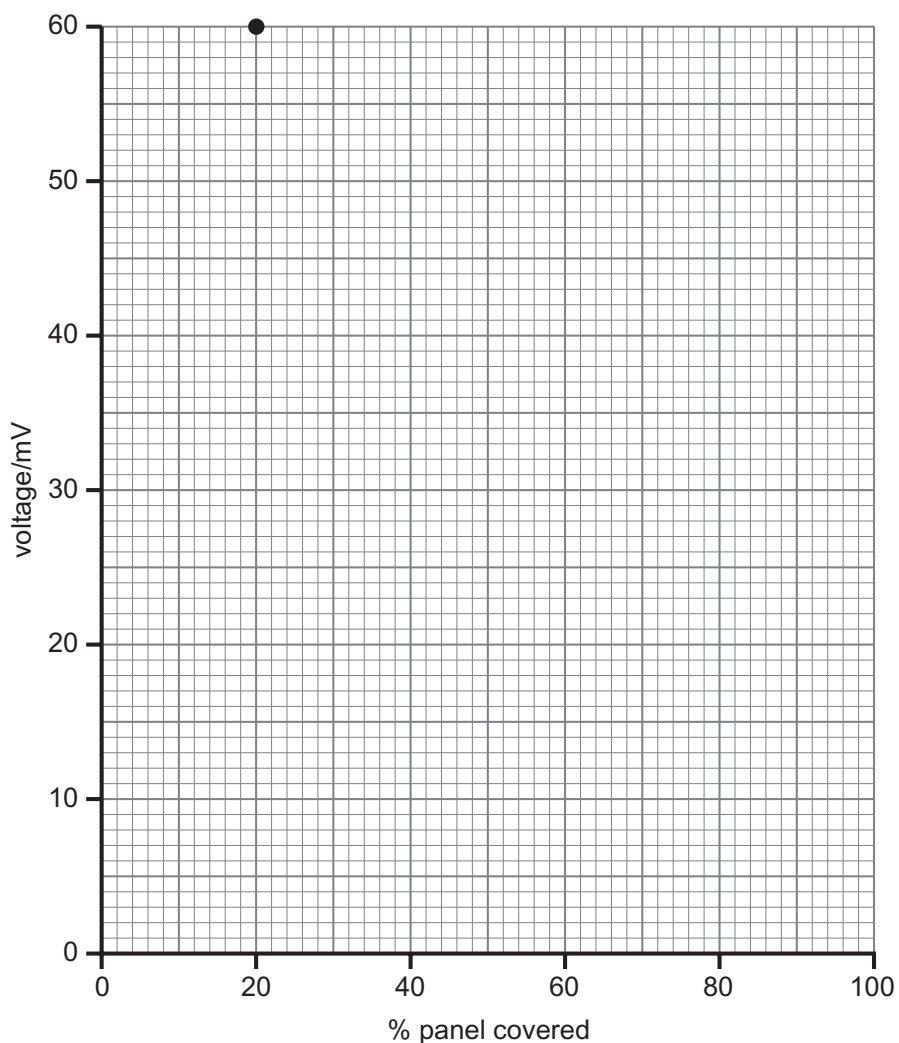


The circuit was taken outside and different percentages of the solar cell were covered in black paper.

The voltage was then recorded. The results are given below.

% panel covered	voltage/mV
20	60
40	45
60	30
80	15
100	0

- (i) Complete the graph for these results on the grid below.



[2]

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Marks	Remark

(ii) State a conclusion from this investigation.

\_\_\_\_\_  
\_\_\_\_\_ [1]

(iii) When this experiment was carried out the next day by the same people using the same equipment a different set of results were found.  
Explain fully what might have caused the results to be different.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

(b) Visible light is one part of the electromagnetic spectrum.

(i) Name another wave type from the electromagnetic spectrum.

\_\_\_\_\_ [1]

(ii) State **one** feature all electromagnetic waves have in common.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark







6 (a) The pictures below show a bathroom and a bedroom.



© George Doyle/Stockbyte/Thinkstock



© istockphoto/Thinkstock

Suggest why your voice will sound more powerful in the bathroom rather than the bedroom.

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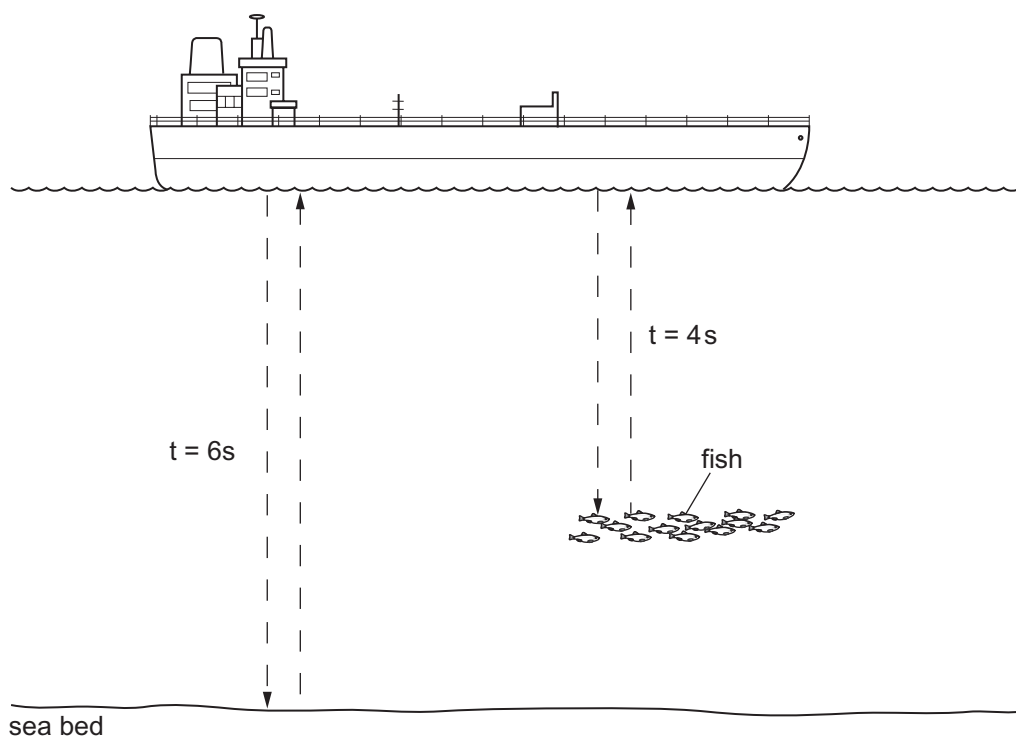
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[3]

(b) Ultrasound can be used for both depth measurement and locating fish as shown in the diagram below.



The times shown on the diagram are the **return times** for the ultrasound and the speed of sound in water is 1500 m/s.

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Marks	Remark

Use the equation:

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

to calculate the height of the fish above the sea bed.

Answer \_\_\_\_\_ m [4]

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**THIS IS THE END OF THE QUESTION PAPER**

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Examiner Only	
Marks	Remark

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