



Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Electricity, Waves and Communication
Module 5

Foundation Tier

[GSC51]

WEDNESDAY 29 FEBRUARY 2012
9.30 am–10.15 am



Centre Number

71	
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Candidate Number

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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	

Total Marks	
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- 1 (a) Below are four statements, but only **two** are correct descriptions of waves.

Circle the two correct statements.

Amplitude is the length of one complete vibration

Wavelength is the length of one complete vibration

Wavelength is the number of vibrations per second

Amplitude is the maximum height of a wave

[2]

- (b) Complete the sentences below.

Choose from:

energy longitudinal vibrations wavelength

A wave is a series of _____.

Waves carry _____ from one place to another.

There are two types of waves, transverse and

_____.

[3]

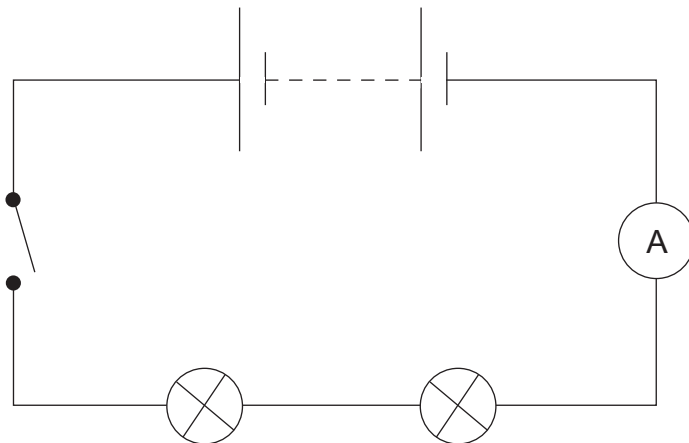
Examiner Only

Marks

Remark

2 (a) Shown below is a simple electric circuit, with two identical bulbs.

Examiner Only	
Marks	Remark



(i) Using the correct symbol show how a voltmeter is added to the circuit to allow the voltage of **one** bulb to be measured. [2]

(ii) The diagram shows the switch open. Explain fully the effect that closing the switch will have.

(iii) What term is used to describe how the bulbs are connected in this circuit?

Circle the correct answer.

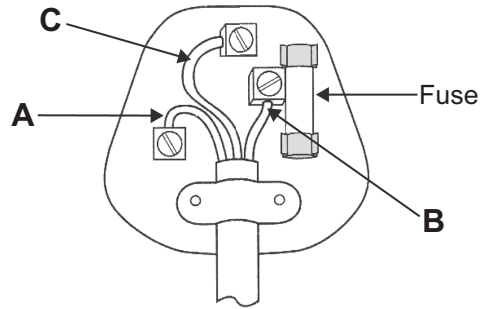
parallel **series** **short** [1]

(iv) The voltage supplied by the batteries is 6V. How much voltage will each bulb receive?

Circle the correct answer.

6V **3V** **12V** [1]

3 The diagram below shows a 3-pin plug.



(a) (i) Name the wires labelled **A** and **B**.

A _____ [1]

B _____ [1]

(ii) What colours are the wire labelled **C**?

_____ and _____ [1]

(b) (i) This plug is used to connect a 2500W washing machine to the 250V mains.

Use the equation:

$$\text{current} = \frac{\text{power}}{\text{voltage}}$$

to calculate the current flowing through the plug.
Show your working out.

Answer _____ A [2]

(ii) What size of fuse should be fitted inside this plug?

Choose from:

2 A

3 A

5 A

13 A

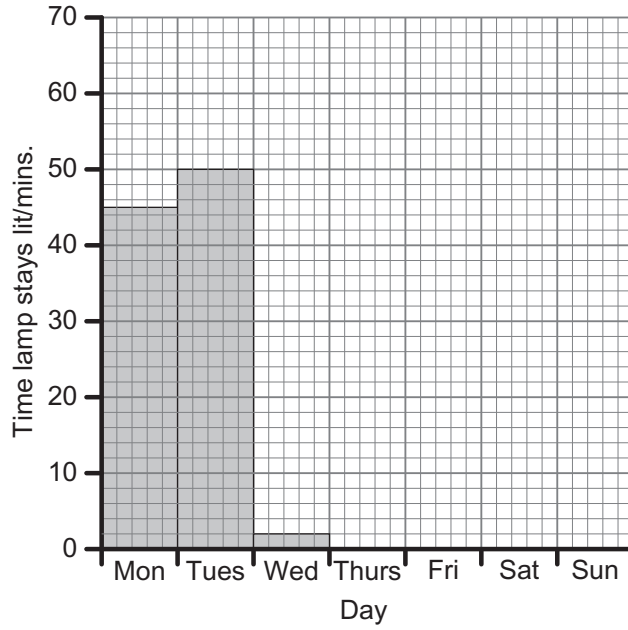
Answer _____ [1]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

(b) Complete the bar graph of the results below.



[2]

(c) Wind is classified as a renewable energy source.

(i) Name another renewable energy source.

_____ [1]

(ii) Explain fully why developing renewable energy sources is becoming more important for the environment.

 _____ [3]

Examiner Only	
Marks	Remark

6 The picture below shows a race being started using a starting pistol.

There is a large brick wall at the side of the running track.

“Image of runners starting a race with a brick wall in the background”.

Each time the pistol is fired an echo is heard a short time later.

(a) Suggest why the runners will see the smoke from the pistol before they hear the sound.

[1]

(b) Explain fully why the runners will hear an echo.

[2]

Examiner Only	
Marks	Remark

- (c) The wall is 50 m behind the starter and the echo is heard 0.3 s after the pistol is fired.

Use the equation:

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

to calculate the speed of sound in air.
Show your working out.

Answer _____ m/s [3]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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