Rewarding Learning

Centre Number

71	

Candidate Number

General Certificate of Secondary Education
2012

Science: Single Award (Modular)

Electricity, Waves and Communication Module 5

Foundation Tier

[GSC51]

GSC51

WEDNESDAY 14 NOVEMBER 2012, AFTERNOON

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	

Examiner Only	
Marks	Remark

1 **(a)** Below are three electrical properties and their units.

(i) Use lines to match each property with the correct unit.

Property	Unit
Voltage	Ohm
Resistance	Volt
Current	Ampere

[2]

(ii) Which of the above properties causes a heating effect when electricity flows?

_____ [1]

(iii) Name **two** appliances that use the heating effect of electricity.

Choose from:

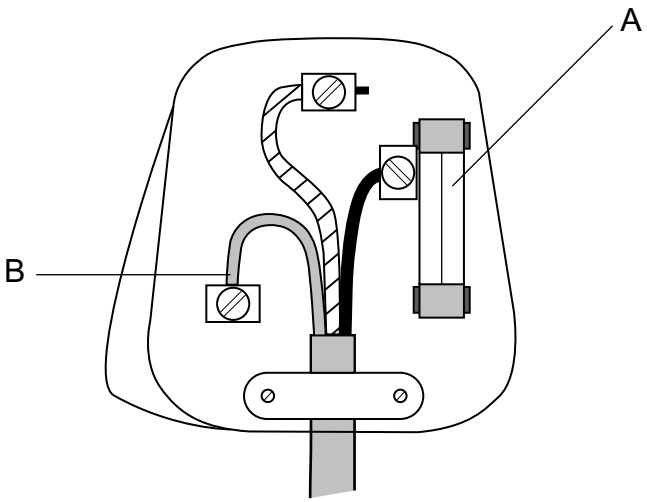
fridge **toaster** **radio** **kettle** **drill**

_____

_____ [2]

(b) The diagram below shows a three-pin plug.

Examiner Only	
Marks	Remark



(i) Name the part labelled A. _____ [1]

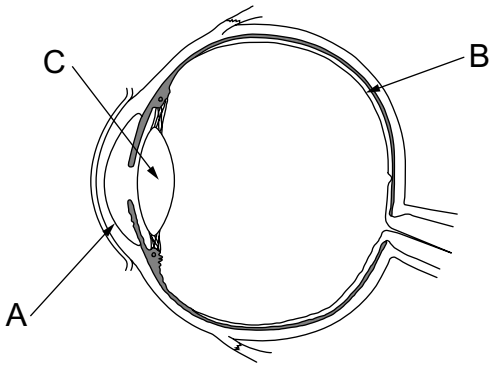
(ii) Name the wire labelled B. _____ [1]

(iii) What colour is the earth wire?

_____ and _____ [1]

Examiner Only	
Marks	Remark

2 The diagram below shows the human eye.



(a) Name the parts labelled A and B on the diagram.

Choose from:

iris **retina** **pupil** **cornea**

A _____

B _____ [2]

(b) **(i)** Name the type of lens shown as part C.

Circle the correct answer.

contact **convex** **concave** [1]

(ii) Describe fully what this type of lens does to parallel rays of light entering the eye.

_____

_____ [2]

(c) Short sight is a common eyesight problem.

Examiner Only	
Marks	Remark

(i) State fully the cause of short sight.

_____

_____

_____ [2]

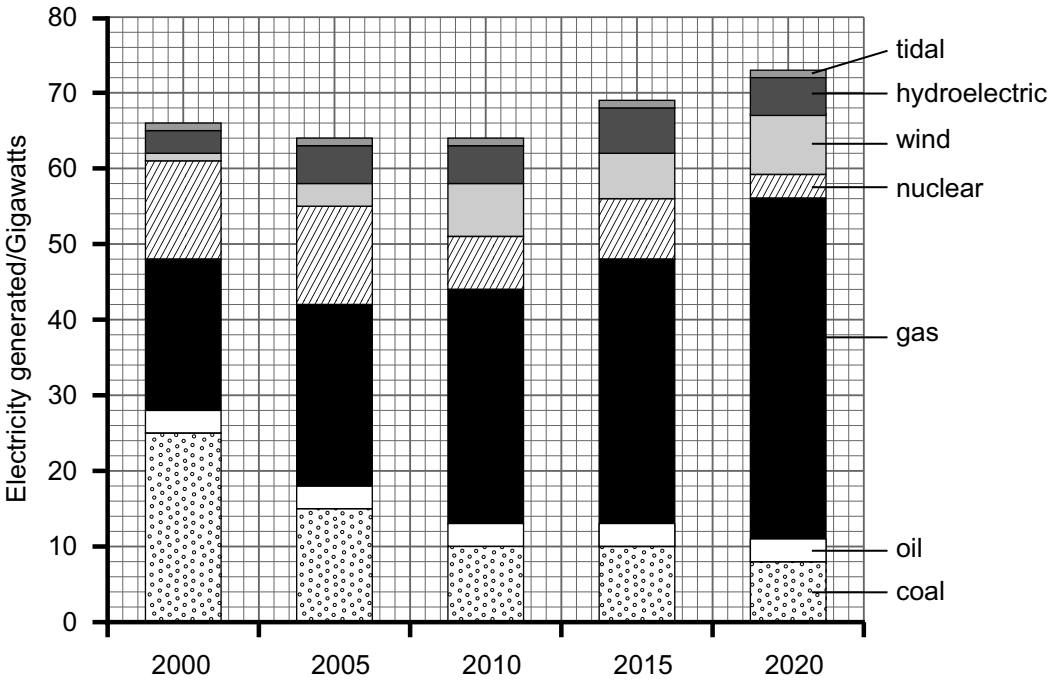
(ii) Suggest how short sight would affect a person's vision.

_____

_____ [1]

Examiner Only	
Marks	Remark

3 The graph below shows the energy sources used to generate electricity in the UK in the years 2000, 2005 and 2010. It also shows predictions for 2015 and 2020.



(a) (i) Name **one** energy source that was used more in 2010 than in 2000.

_____ [1]

(ii) Name **one** energy source that was used less in 2010 than in 2000.

_____ [1]

(b) (i) What is meant by the term 'renewable'?

Circle the correct answer.

will run out : **can be used again** : **will not run out** [1]

(ii) Name **one** renewable source shown in the graph.

_____ [1]

(c) The graph shows that generation of electricity from tidal sources remains almost the same over the 20 years. Suggest **one** reason for this.

_____

_____ [1]

(d) Complete the following sentences.

Choose from:

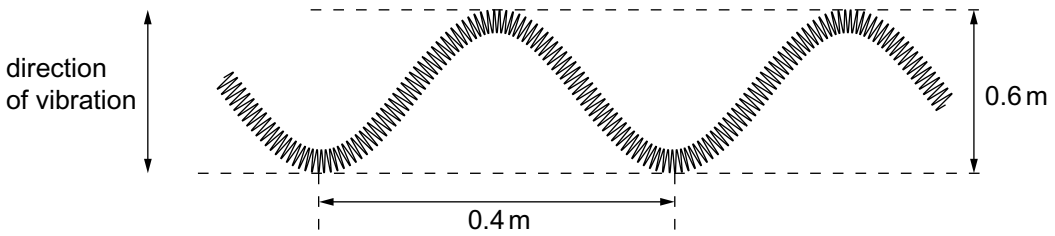
burn **coast** **extract** **transport** **border**

All of Northern Ireland's fossil fuel power stations are located close to the _____ . This makes it easier to _____ the fossil fuels. [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

4 **(a)** Andrea uses a stretched slinky spring to demonstrate a wave as shown in the diagram.



(i) What type of wave is shown above?

Choose from:

longitudinal **digital** **transverse**

_____ [1]

(ii) What is the amplitude of this wave?

Choose from:

0.6 m **0.4 m** **0.3 m** **0.8 m**

_____ m [1]

(iii) What is the wavelength of this wave?

Choose from:

0.6 m **0.4 m** **0.3 m** **0.2 m**

_____ m [1]

(b) The table below shows the electromagnetic spectrum.

Gamma rays	X-rays	Ultraviolet	Visible light	Infrared	Microwaves	Radio waves

(i) State **one** feature these waves have in common.

_____ [1]

(ii) State **one** feature that is different for each of these waves.

_____ [1]

(iii) Name **one** type of electromagnetic wave used for communication and state how it is used.

Name _____

Use _____

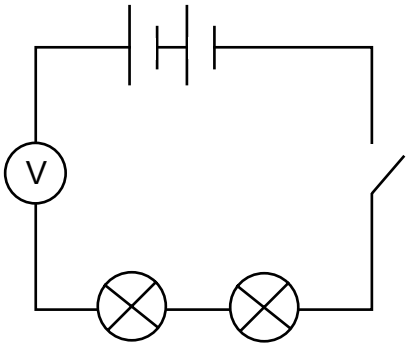
_____ [2]

Examiner Only

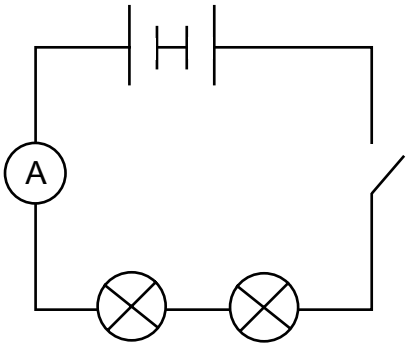
Marks	Remark

Examiner Only	
Marks	Remark

5 **(a)** Students set up two experiments to measure the current from two cells. The symbol | | represents one cell. Their circuit diagrams are shown below but each contains **one** mistake.



Circuit 1



Circuit 2

(i) Identify the mistake in each circuit.

Circuit 1 _____

_____

Circuit 2 _____

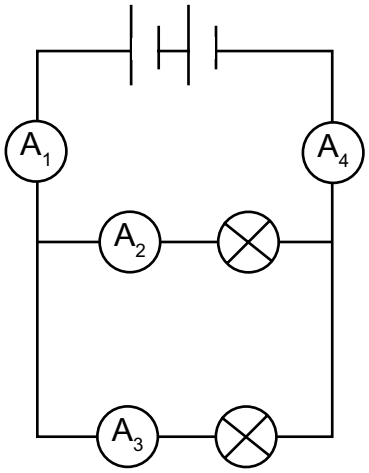
_____ [2]

(ii) What term is used to describe how the bulbs are connected in both circuits?

_____ [1]

Examiner Only	
Marks	Remark

(b) The students then set up the circuit shown below. Both bulbs are identical.



Circuit 3

Ammeter (A1) reads 0.4 amps.

What is the reading on:

ammeter (A3)? _____amps

ammeter (A4)? _____ amps [2]

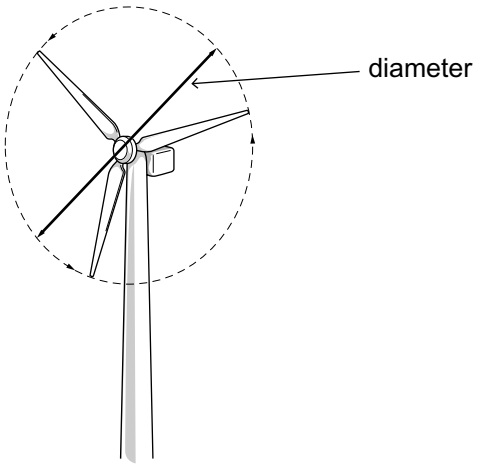
(c) Describe fully why it is safer to have car headlights (bulbs) connected together as shown in circuit 3 rather than as shown in circuits 1 and 2.

_____

_____

_____ [2]

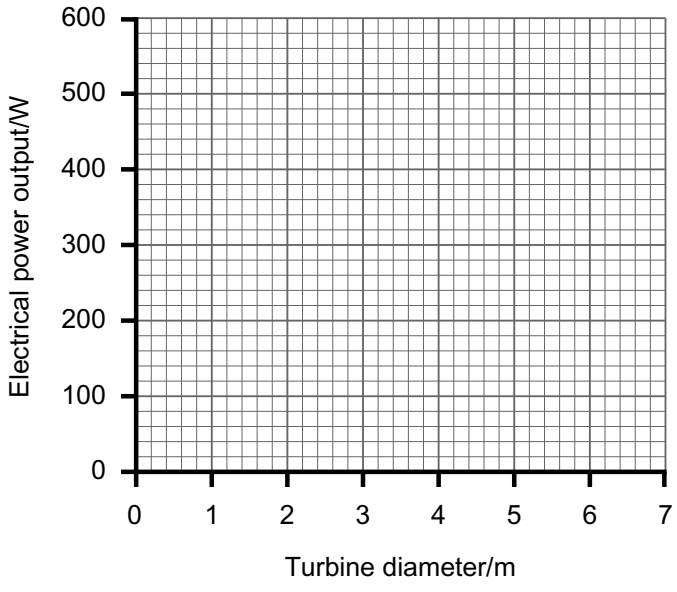
6 The diagram below shows a wind turbine used to generate electricity.



The table below shows how the electrical power output depends on the diameter of the turbine.

Turbine diameter/m	Electrical power output/W
2	60
3	130
4	240
5	370
6	540

(a) Plot a **line graph** of these results on the grid below.



[3]

Examiner Only

Marks	Remark

(b) What conclusion can be drawn from these results?

_____

_____ [1]

(c) Suggest **one** other factor that will affect the amount of electricity produced.

_____ [1]

(d) Explain fully why the Government is promoting the use of wind turbines to generate electricity.

_____

_____

_____

_____ [3]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER