



Centre Number

71

Candidate Number

General Certificate of Secondary Education  
2010–2011

## Science: Single Award (Modular)

Road Safety, Radioactivity  
and Earth in Space

Module 6

Foundation Tier

[GSC61]



FRIDAY 12 NOVEMBER 2010, 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

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2 (a) Most of the electricity in Northern Ireland is produced from fossil fuels.

Tick (✓) **two** correct statements below about fossil fuels.

They take less than a hundred years to make.

They will last forever.

They will run out.

They are made from dead plants and animals.

[2]

(b) Lignite is a fossil fuel which is found in Northern Ireland. The photograph below shows a site near Ballymoney from which it is hoped to mine lignite.



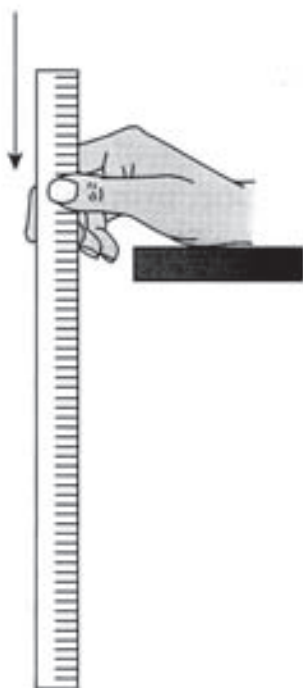
© S Roulston <http://www.geographyinaction.co.uk/Issues/Lignite.htm>

Examiner Only	
Marks	Remark

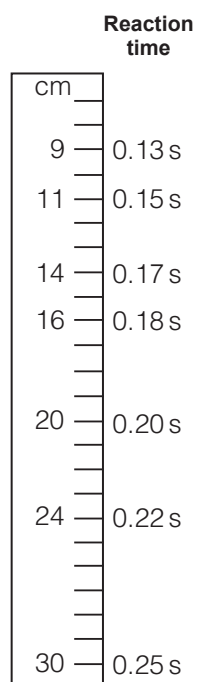




- (b) Quick reactions are very important whilst driving.  
You can find how fast your reactions are by releasing and catching a ruler and then using the reaction time chart.



Reaction-time chart



- (i) John did the test and caught the ruler at 16 cm.  
Use the reaction-time chart to find his reaction time.

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

- (ii) Using this apparatus how would you get a more reliable reaction time for John?

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

Examiner Only

Marks Remark

(c) The table below shows the frictional force for a smooth and patterned tyre on different road conditions.

Type of tyre	Road conditions	Frictional force/N
Smooth	dry	0.9
	wet	0.1
Patterned	dry	0.7
	wet	0.4

Use the information in the table to explain fully why a racing driver should use smooth tyres in dry conditions.

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[2]

Examiner Only	
Marks	Remark



4 (a) The information below was recently printed in a newspaper.

If a car hits a pedestrian...

- at 30 mph, they have a 20% chance of being killed
- at 35 mph, they have a 50% chance of being killed
- at 40 mph, they have a 90% chance of being killed.

(i) Complete the following sentence to give a trend shown by this information.

In an accident, the higher the speed \_\_\_\_\_  
\_\_\_\_\_ [1]

(ii) State **one** way in which speed limits can be enforced.

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

Examiner Only	
Marks	Remark





- 6 (a) A teacher performed an experiment to see how beta radiation passed through different thicknesses of aluminium.

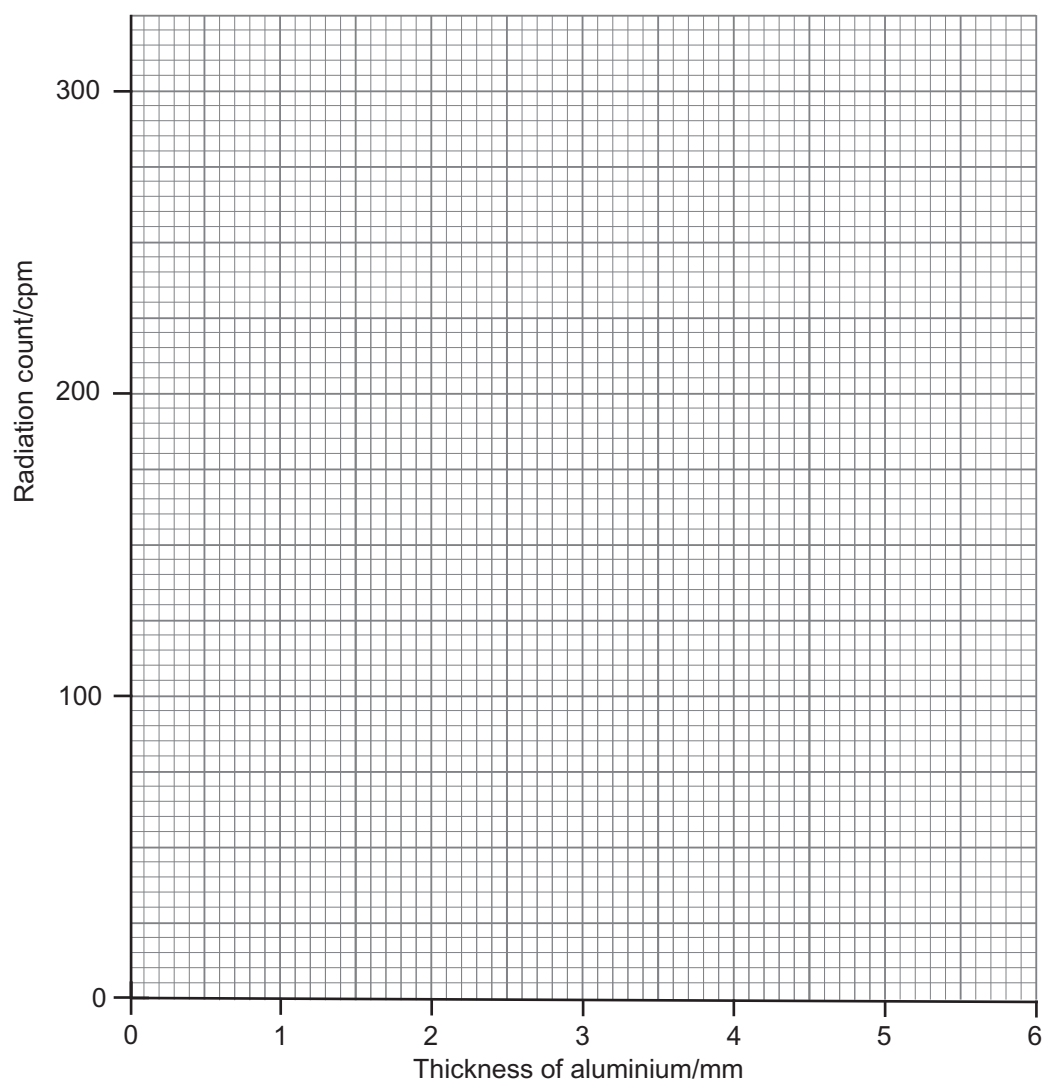


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His results are shown in the table below and include background radiation.

Thickness of aluminium/mm	1.0	2.0	3.0	4.0	5.0	6.0
Radiation count/cpm	310	190	130	90	70	70

- (i) Plot these points and draw a smooth curve on the axes below.



[3]

Examiner Only

Marks Remark







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