



General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Materials and their Management

Module 4

Foundation Tier

[GSC41]

TUESDAY 28 FEBRUARY 2012

9.30 am–10.15 am



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 seven** 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.

A Data Leaflet, which includes a Periodic Table of the elements, is provided for your use.

For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total
Marks

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1 Below are four common materials.

wood : plastic : petrol : wool

(a) Place each material in the correct column of the table below.

Man-made	Natural

[2]

(b) The window panes shown below are made from glass.



© Eurocell Plc.

(i) Suggest **one** reason why glass is a suitable material to use.

_____ [1]

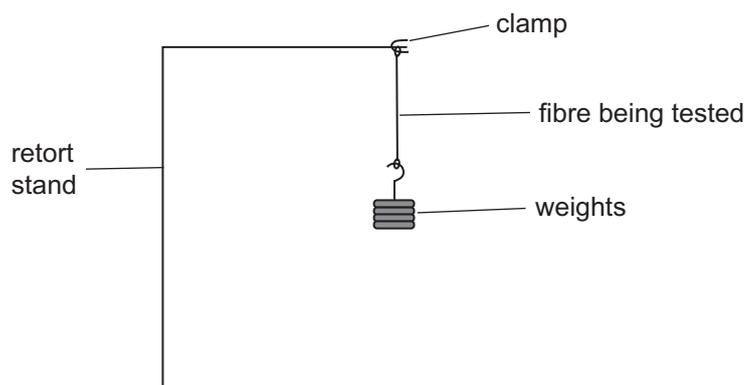
(ii) Window frames used to be made from wood but more recently plastic is usually used. Give **two** reasons why plastic is better than wood for making window frames.

1. _____

2. _____

_____ [2]

- 2 Ronald did an investigation to test the strength of five different fibres using the apparatus shown below.



- (a) State **one** thing that must be kept the same to make sure it is a fair test.

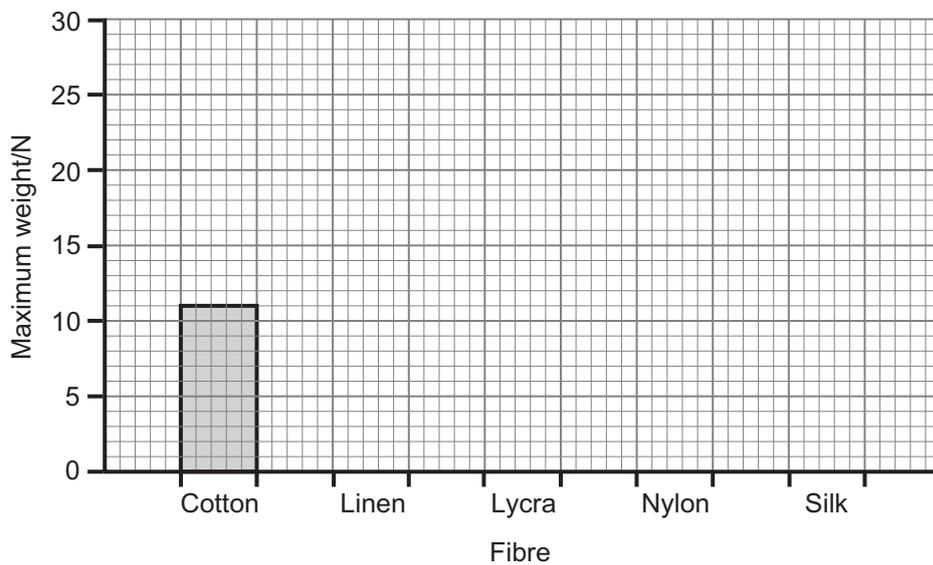
_____ [1]

Examiner Only	
Marks	Remark

- (b) The maximum weight each fibre could hold before breaking was measured and recorded below.

Fibre	Maximum weight/N
Cotton	11
Linen	10
Lycra	25
Nylon	19
Silk	9

- (i) Complete the bar chart below for the results of Ronald's investigation.



[2]

- (ii) Name the weakest fibre.

_____ [1]

Examiner Only	
Marks	Remark

3 (a) Given below are the results of some flame tests. Complete the table.

Choose from:

Lilac : Blue/Green : Red

Metal	Colour of Flame
Copper	
Sodium	Orange/Yellow
Potassium	
Lead	Blue/White

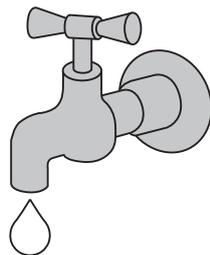
[2]

(b) This experiment can be dangerous. Identify **one** possible risk and describe how this can be avoided.

[2]

Examiner Only	
Marks	Remark

4 Water can be described as being hard or soft.



(a) Complete the sentences below.

Choose from:

stalagmites : **stalactites** : **dissolve** : **sodium** :

soft : **calcium** : **lather** : **permanent**

Hard water is water that does not _____ easily with soap.

There are two types of hard water, temporary and _____ .

The compounds that cause hard water contain magnesium or

_____ .

Hard water areas can have caves where you might find

_____ hanging from the roof. [4]

(b) (i) Give **two** advantages of hard water.

1. _____

2. _____ [2]

(ii) Give **one** disadvantage of hard water.

_____ [1]

(c) Temporary hard water can be softened by boiling. Give **two** methods of softening **permanent** hard water.

1. _____

2. _____ [2]

Examiner Only

Marks

Remark

5 Coal, oil and natural gas are fossil fuels used to heat our homes.



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(a) The chemical formula for natural gas is CH_4 . Name the two **elements** it contains.

(You may find your Data Leaflet helpful.)

_____ and _____ [2]

(b) Why are fossil fuels described as **finite** energy resources?

_____ [1]

(c) Suggest **two** alternative energy sources that could be used **instead** of fossil fuels.

1. _____

2. _____ [2]

(d) In each statement below **circle** the correct word(s) to complete the sentences about natural gas.

(i) Natural gas is a **polymer** / **hydrocarbon** / **plastic**

(ii) When natural gas burns it produces carbon dioxide and
hydrogen / **water** / **oxygen**

(iii) One harmful effect of burning natural gas is

acid rain / **global warming** / **water pollution** [3]

Examiner Only

Marks Remark

6 Bottles can be made from plastic or glass.



© 2012 Bill Lindsey

(a) Give **one** advantage of using plastic instead of glass to make bottles.

_____ [1]

(b) Glass can be recycled. Give **two** ways that local councils are encouraging the recycling of glass.

1. _____

2. _____

_____ [2]

(c) Give **two** reasons why it is important to recycle materials.

1. _____

2. _____ [2]

(d) Some companies are using biodegradable plastics to make their bottles.

(i) Explain fully what is meant by the term **biodegradable**.

_____ [2]

(ii) Give **one** other example of a biodegradable material.

_____ [1]

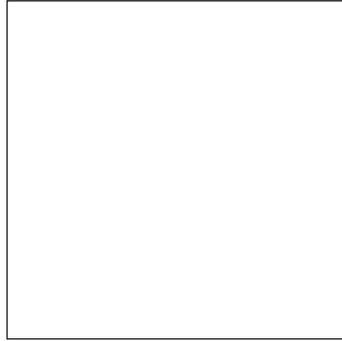
Examiner Only

Marks

Remark

7 Fingerprints can be used to help solve crimes. There are four types of fingerprint patterns; arch, loop, whorl and composite.

(a) In the box below draw the pattern for a **whorl** fingerprint.



[1]

(b) Describe how you would obtain your fingerprint from a white surface such as a tile.

Your description must include:

- how the fingerprint is put onto the tile
- the powder used
- how you would remove excess powder
- how to remove the fingerprint from the tile

[4]

(c) Apart from fingerprints, give **two** other types of forensic evidence which scientists collect at the scene of a crime.

1. _____
2. _____

[2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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