



*Rewarding Learning*

General Certificate of Secondary Education  
2011–2012

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**Science: Single Award (Modular)**

Materials and their Management

Module 4

Foundation Tier

[GSC41]

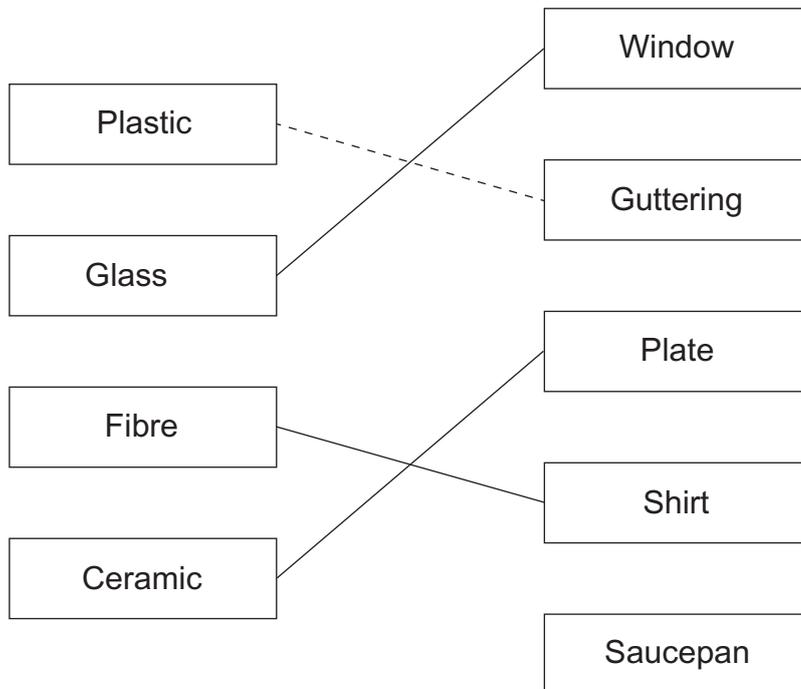
**MONDAY 21 MAY 2012**

**9.15 am–10.00 am**

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**MARK  
SCHEME**

1 (a)



One mark for each correct line.

[3]

(b) (i) Strong

Hard

relatively cheap

Any order, One mark for each correct response

[3]

(ii) Any **two** of:

Plastic is lighter/less dense [1]

Plastic does not rust/react with water [1]

Plastic does not need to be painted [1]

Plastic is cheaper [1] (must be comparison)

**Accept** opposite argument for metal, e.g. metal is heavier

[2]

8

2 (a) Cancel newspaper delivery

Close all gates

Ask a neighbour to check the house regularly

One mark for each correctly circled response

[3]

(b) Any **three** of:

Quality of paper [1]

Watermarks [1]

Metal strip [1]

Bar coding [1]

Holograms [1]

Fake note will fluoresce under UV light [1]

[3]

(c) Chromatography [1]

7

		AVAILABLE MARKS	
3	(a) (i) 5 bars correctly plotted [2] 3/4 bars correctly plotted [1]	[2]	
	(ii) The amount of waste being recycling has <b>increased</b> over the past 8 years. [1]		
	(b) (i) 2. Collection and Transport [1] 3. Reprocessing of Cullet/crushing of glass/making cullet [1]	[2]	
	(ii) Any <b>one</b> of: <ul style="list-style-type: none"> <li>● Saves raw materials/saves resources</li> <li>● Cuts down the number of quarries (to obtain raw materials)</li> <li>● Cuts down the amount of energy/fossil fuels used</li> <li>● Reduce landfill sites/glass is not biodegradable</li> </ul>	[1]	
(c) Any <b>one</b> of: <ul style="list-style-type: none"> <li>● Destroys natural habitats</li> <li>● Noise pollution/increase in traffic</li> <li>● Dust pollution</li> <li>● Eyesore</li> </ul> (Accept other suitable)	[1]	7	
4	(a) (i) C [1]		
	(ii) A [1]		
	(iii) B [1]		
	(b) Any <b>two</b> of: <ul style="list-style-type: none"> <li>● Same volume of water</li> <li>● Shaken with the same vigour/same person shaking</li> <li>● Same size of test tube</li> <li>● Same amount of boiling</li> </ul> (not: same amount of soap/temperature/time)	[2]	
	(c) Calcium/Magnesium only [1]		
	(d) Any <b>two</b> of: <ul style="list-style-type: none"> <li>● Caves</li> <li>● Stalactites</li> <li>● Stalagmites</li> <li>● Limestone pavements</li> </ul>	[2]	8

		AVAILABLE MARKS
5	<p>(a) Thermoplastic/Thermosoftening [1] Thermosetting [1] [2]</p> <p>(b) Non-Biodegradable materials will not decay [1] by the action of bacteria [1]</p> <p>(c) (i) <b>Starch/Plant material</b> or any <b>named</b> starchy plant, e.g. potato, maize [1]</p> <p>(ii) Any <b>two</b> of</p> <ul style="list-style-type: none"> <li>● Other named recycling bin, e.g. glass, paper</li> <li>● Providing recycling centres</li> <li>● Recycling available at supermarkets, etc.</li> <li>● Charging businesses for putting waste in landfill sites</li> <li>● Advertising/Education [2]</li> </ul>	7
6	<p>(a) Any <b>three</b> of:</p> <ul style="list-style-type: none"> <li>● Crude oil is heated/vaporized</li> <li>● Each hydrocarbon/fraction has a different boiling point</li> <li>● Each fraction contains hydrocarbons with similar number of carbon atoms/similar sized hydrocarbons</li> <li>● Each fraction separates at a different level/section</li> <li>● Fractions are condensed and collected [3]</li> </ul> <p>(b) Fuel for gas ovens/LPG/Calor gas/heating homes [1]</p> <p>(c) (i) Oxygen [1], Water [1] (accept correct symbols)</p> <p>(ii) Global Warming/Greenhouse effect [1]</p> <p>(d) Any <b>one</b> of:</p> <ul style="list-style-type: none"> <li>● Setting carbon dioxide emission limits</li> <li>● Climate change program</li> <li>● Clean Air act</li> <li>● Air Quality strategy</li> <li>● encouraging giving grants for use of alternative fuels</li> <li>● adverts encouraging less use of cars [1]</li> </ul>	8
<b>Total</b>		<b>45</b>