



*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]**

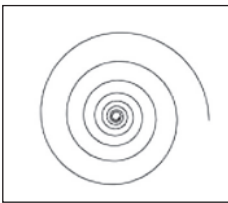
**TUESDAY 28 FEBRUARY 2012**

**9.30 am–10.15 am**

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**MARK  
SCHEME**

		AVAILABLE MARKS									
1	(a)										
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Man-made</th> <th style="width: 50%; text-align: center;">Natural</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Plastic</td> <td style="text-align: center;">Wool</td> </tr> <tr> <td style="text-align: center;">Petrol</td> <td style="text-align: center;">Wood</td> </tr> </tbody> </table>	Man-made	Natural	Plastic	Wool	Petrol	Wood			
Man-made	Natural										
Plastic	Wool										
Petrol	Wood										
	$\frac{1}{2}$ mark for each correct answer, rounded down.	[2]									
1	(b) (i) glass is transparent/ see through/insulator/water proof	[1]									
	(ii) Any <b>two</b> of: No need to paint/less maintenance/longer lasting or durable/ doesn't rot	[2]									
		5									
2	(a) Any <b>one</b> of: same length of fibre/same thickness of fibre/ other suitable	[1]									
	(b) (i) 4 correct bars plotted [2] 2 or 3 bars plotted [1]	[2]									
	(ii) Silk	[1]									
		4									
3	(a)										
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Metal ion</th> <th style="width: 50%; text-align: center;">Colour of Flame</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Copper</td> <td style="text-align: center;"><b>Blue/Green</b> [1]</td> </tr> <tr> <td style="text-align: center;">Sodium</td> <td style="text-align: center;">Orange/Yellow</td> </tr> <tr> <td style="text-align: center;">Potassium</td> <td style="text-align: center;"><b>Lilac</b> [1]</td> </tr> <tr> <td style="text-align: center;">Lead</td> <td style="text-align: center;">Blue/White</td> </tr> </tbody> </table>	Metal ion	Colour of Flame	Copper	<b>Blue/Green</b> [1]	Sodium	Orange/Yellow	Potassium	<b>Lilac</b> [1]	Lead
Metal ion	Colour of Flame										
Copper	<b>Blue/Green</b> [1]										
Sodium	Orange/Yellow										
Potassium	<b>Lilac</b> [1]										
Lead	Blue/White										
	(b) Acid in eyes/hot apparatus/or suitable [1] Wear Safety glasses/goggles/wear gloves/tie hair back appropriate explanation [1]	[2]									
		4									
4	(a) Lather [1] Permanent [1] Calcium [1] Stalactites [1]	[4]									
	(b) (i) Any <b>two</b> of: better taste/good for brewing or making beer/good for teeth or bones/prevents heart disease/good for tanning or curing leather	[2]									
	(ii) Any <b>one</b> of: wastes soap/leaves fur in kettle/blocks pipes with limescale/scum with soap/stains cloths <b>Not</b> more expensive unless linked to using a lot of soap	[1]									
	(c) Any <b>two</b> of: Adding washing soda/using ion exchange column/ distillation	[2]									
		9									

			AVAILABLE MARKS
5	(a) Carbon [1] Hydrogen [1] <b>either order</b>	[2]	
	(b) It will run out/there is a limited amount	[1]	
	(c) Any <b>two</b> of; Solar/wind/wave/tidal/nuclear/geothermal/HEP/biomass/hydrogen/sun	[2]	
	(d) (i) Hydrocarbon [1]		
	(ii) Water [1]		
	(iii) Global Warming [1]	[3]	8
6	(a) any <b>one</b> of: lighter/doesn't break easily/cheaper/easily moulded/safer qualified	[1]	
	(b) any <b>two</b> of: Bottle banks/household bins for recycling/advertising/fines; rewards	[2]	
	(c) any <b>two</b> of: saves energy/money/saves raw materials/reduces/stops use of landfill	[2]	
	(d) (i) Breaks down/decays/rots [1] by microbes/decomposers/microorganism/bacteria/fungus [1]	[2]	
	(ii) any named suitable <b>material</b> e.g. cotton, wool, paper/wood/food [1]		8
7	(a)  Any spiral shape	[1]	
	(b) Gently press finger on tile/surface [1] Sprinkle some <b>carbon/black</b> powder on the paper [1] Use a ( <b>paint</b> ) <b>brush</b> to remove excess powder gently [1] Place a piece of (sticky) tape on the fingerprint and remove [1]	[4]	
	(c) <b>Any 2</b> from  Hair [1] Blood [1] DNA/skin/saliva/sperm [1] Footprint [1] Fibres [1] Paint/metal [1]  Or other suitable	[2]	7
<b>Total</b>			<b>45</b>