



*Rewarding Learning*

**General Certificate of Secondary Education  
2010–2011**

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**Science: Single Award (Modular)**

**Materials and their Management  
Module 4**

**Foundation Tier**

**[GSC41]**

**FRIDAY 20 MAY 2011, AFTERNOON**

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**MARK  
SCHEME**

			AVAILABLE MARKS
1	(a)	relatively cheap [1], strong [1], easy to shape [1] [3]	5
	(b)	less damage in accident/lightweight/long lasting/cheaper/appearance (any 2) [2]	
2	(a)	bitumen/tar [1], naphtha/chemicals [1], diesel/fuel [1] [3]	6
	(b) (i)	carbon [1], hydrogen [1] [2]	
	(b) (ii)	carbon [1] [1]	
3	(a)	brightness [1]	4
	(b)	thermochromic [1]	
	(c)	particles [1], size [1] [2]	
4	(a)	visitors/bathers [1], wind [1], washed in [1] or other suitable [2]	8
	(b)	charge for bags [1], promote reusing bags [1], biodegradable plastic bags (any 2) [2]	
	(c)	kills wildlife [1]	
	(d) (i)	have to be separated [1]	
	(d) (ii)	thermoplastic [1], thermosetting [1] [2]	
5	(a) (i)	solvent would dissolve inks [1], inks could not be separated [1] [2]	9
	(a) (ii)	will be able to compare dyes in all three words [1], result of comparison [1] [2]	
	(a) (iii)	4 dyes [1]	
	(a) (iv)	it contains 2 different black inks as shown by the different number of dyes [1], more dots/dyes in the ninety [1]	
	(b)	three from /cut out different words [1], add a few drops of water [1] use a small capillary dropping tube to spot chromatogram [1] use clean droppers/dry between spots [1] or other suitable e.g. damp cotton bud [2] [3]	

			AVAILABLE MARKS
<b>6</b>	<b>(a)</b> potassium chloride [1], magnesium sulphate [1]	[2]	7
	<b>(b)</b> two from magnesium sulphate/magnesium chloride/calcium nitrate	[2]	
	<b>(c)</b> measuring cylinder/pipette/burette	[1]	
	<b>(d)</b> calcium carbonate [1], carbon dioxide [1] accept <i>correct</i> formula	[2]	
<b>7</b>	<b>(a)</b> 5 points correct [2], 4 points [1] line [1]	[3]	6
	<b>(b)</b> answer from graph	[1]	
	<b>(c)</b> cut down on levels CO <sub>2</sub> /greenhouse effect/global warming/ non-renewable or named effect	[1]	
	<b>(d)</b> important in making polymers/polythene/plastic	[1]	
		<b>Total</b>	<b>45</b>