OCR
RECOGNISING ACHIEVEMENT

GCSE

Additional Science A

General Certificate of Secondary Education

Unit **A216/02:** Modules B5, C5, P5 (Higher Tier)

Mark Scheme for June 2011

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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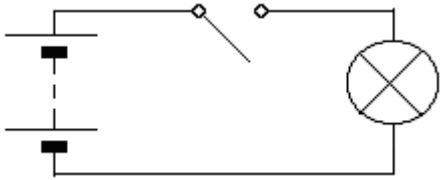
<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Mark</th><th>Guidance</th></tr>
<tr><td>1</td><td>a</td><td></td><td>3, 2, 2</td><td>2</td><td>all correct = 2
2 correct = 1</td></tr>
<tr><td></td><td>b</td><td></td><td>answer = 62.1 [tonnes] (1)</td><td>2</td><td>if not correct, accept any reference to 239 for 1 mark</td></tr>
<tr><td></td><td>c</td><td></td><td>☐
higher quality ores ☑ (1)
☐
There are no ores left ☑ (1)
☐
☐</td><td>1</td><td></td></tr>
<tr><td></td><td>d</td><td></td><td>
<table>
<tr><th>description</th><th>silicon dioxide only</th><th>sulfur dioxide only</th><th>both</th><th>neither</th></tr>
<tr><td>high melting point</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>low melting point</td><td></td><td>✓</td><td></td><td></td></tr>
<tr><td>covalent bonds</td><td></td><td></td><td>✓</td><td></td></tr>
<tr><td>ionic bonds</td><td></td><td></td><td></td><td>✓</td></tr>
<tr><td>giant structure</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>simple molecular compound</td><td></td><td>✓</td><td></td><td></td></tr>
<tr><td>weak forces between</td><td></td><td>✓</td><td></td><td></td></tr>
</table>
</td><td>4</td><td>7 ticks correct = 4
6 or 5 ticks correct = 3
4 or 3 ticks correct = 2
2 ticks correct = 1
1 tick correct = 0</td></tr>
</table>

Question			Answer	Mark	Guidance
	e		recycling [if the material is named, it must be lead containing] (1) of car batteries (1)	2	
	f		**A** (1)	1	
	g	i	**Br** $^{-}$ (1)	1	**accept** Br $^{-1}$ must be capital 'B' and lower case 'r'
		ii	line from the lead ion pointing towards the negative electrode. The line must stay within the liquid, and must not end below the bottom of the electrode. line from bromide ion pointing towards the positive electrode. The line must stay within the liquid, and must not end below the bottom of the electrode.	1	lines must have direction indication, e.g. arrowheads lines go anticlockwise
			Total	[14]	

2	a		voltage (1) current (1)	2	
	b		☐ ☐ ☐ Move the magnet more quickly into ... ☑ (1) Increase the number of turns ... ☑ (1) ☐	2	correct pattern = 2 one mistake = 1 a mistake is • a tick in the wrong place • a missing tick • an extra tick
			Total	[4]	

Question			Answer	Mark	Guidance
3	a		☐ ☐ ☐ All three resistors have the same ... ☑ (1)	1	
	b		electrons move [atoms don't] [electrons] collide with atoms [in the resistor] energy transferred FROM [electrons to atoms] / MAKES atoms [only] vibrate OWTTE	3	**ignore** reference to current **ignore** 'electrons and atoms collide'
	c		24 W (1)	1	
			Total	[5]	

Question			Answer	Mark	Guidance
4	a			1	look for complete loop and correct symbol for switch and lamp anywhere in series with other components **accept** curved lines for wires **accept** switch without the circles **accept** either symbol for the lamp / LED correct direction
	b		resistance (1) battery (1) current (1)	3	
	c		Charge is not able to flow through ... ☐ ☑ ☐ ☐ (1)	1	
			Total	[5]	

Question			Answer	Mark	Guidance
5	a		**B** (1)	1	
	b		**any three from:** meiosis (1) idea that [gametes have] 39 chromosomes / haploid / half the chromosomes (1) links [gamete fusion] to zygote / embryo (1) [gametes fuse] to give full number / diploid / double the number of chromosomes (1)	3	NB 'Gametes fuse' is in the stem **accept** mis-spelling of meiosis [ie but not if a 'T' is present!] **accept** 'reduction division' instead of meiosis unless stated otherwise, assume that the candidate is referring to gametes as the product of cell division this mark not available if candidate implies chromosomes come from both parents **ignore** 'cells/ chromosomes split in half' **allow** 'half the genetic information' 'gametes fuse and double the number of chromosomes' = 1 **ignore** 'gametes double the number of chromosomes' **ignore** 'half the chromosomes from each parent' in the context of this marking point references to fusing and to halving must be in the correct context
			Total	**[4]**	

6	a		nucleus cytoplasm two four	2	4 correct = 2 3 or 2 correct = 1
	b		link different genes to [different] protein / colours (1) genes are switched on/off [at different times of the year] (1)	2	 **accept** 'activated' / made active
	c		27 % (1)	1	
			Total	**[5]**	

Question			Answer	Mark	Guidance
7	a		**C** (1)	1	
	b		auxin diffused ☐ ✓ (1) most auxin grew more ☐ ✓ (1)	2	
	c		photosynthesis (1)	1	
	d		Wendy (1)	1	
			Total	[5]	

			Paper Total	[42]	

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