



GCSE

## Additional Science A

General Certificate of Secondary Education **A215/02**

Unit 1: Modules B4, C4, P4

### **Mark Scheme for June 2010**

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Question		Expected Answers	Marks	Additional Guidance
1	a	diffusion (1)	[1]	
	b	more oxygen than; less oxygen than; carbon dioxide;	[2]	correct pattern of rings for 2 marks one mistake for 1 mark a mistake is: • a ring in the wrong place • an extra ring a missing ring
	c	Molecules ... <input type="checkbox"/> Chemical reactions ... <input type="checkbox"/> Enzymes ... <input checked="" type="checkbox"/> (1) Cells change shape ... <input type="checkbox"/>	[1]	more than one box ticked = 0 marks
Total			[4]	

Question		Expected Answers	Marks	Additional Guidance
2	a	diffusion is movement (of particles) from high concentration to lower concentration/down concentration gradient (1) active transport moves (particles) from low to high concentration/against concentration gradient (1) active transport needs energy / diffusion does not need energy (1)	[3]	accept 'passive' for idea that diffusion does not require energy
	b i	pituitary (1)	[1]	
	ii	<p>alcohol      increased ...      greater volume and less dilute</p> <p>Ecstasy      decreased ...      smaller volume and more dilute</p>	[3]	four lines correct = 3 marks three lines correct = 2 marks two lines correct = 1 mark zero or one line correct = 0 marks
		<b>Total</b>	[7]	

Question		Expected Answers	Marks	Additional Guidance
3	a	hypothalamus (1)	[1]	accept brain ignore CNS/ central nervous system
	b	<b>any two from:</b> increases blood flow through surface capillaries; allowing (more) heat loss; by radiation;	[2]	accept more blood flow at surface of skin/near her skin do <b>not</b> accept capillaries move accept (more) energy loss ignore references to sweat and sweating
<b>Total</b>			[3]	

4	a	Brenda (1)	[1]	
	b	i one (1)	[1]	
		ii <b>any three from:</b> pick up/ lose electrons at the electrode; (the compound is) ionic/made of ions; ions are charged; ions move;	[3]	do <b>not</b> accept spread for move
	c	i some movement; it gets smaller; it produces bubbles;	[2]	three columns correct = 2 marks two columns correct = 1 mark zero or one column correct = 0 marks
		ii lithium + water → lithium hydroxide + hydrogen (1)	[1]	accept reactants in either order accept products in either order accept symbol equation only if perfect
<b>Total</b>			[8]	

Question			Expected Answers		Marks	Additional Guidance
5	a	i	g, aq, l		[2]	all three correct for 2 marks any two correct for 1 mark must be correct symbols, not words <b>not</b> AQ or Aq or aQ <b>accept</b> L or G
		ii	$\text{OCl}^-$ (1)		[1]	
	b	i	$2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$		[2]	all formulae correct = 1 mark correct balancing = 1 mark ( <b>allow</b> correct multiples) e.g. $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{C}\text{Na}$ scores 1 mark for balancing <b>accept</b> = for $\rightarrow$
		ii	highly reactive reactive less reactive unreactive	✓  ✓  ✓	[1]	all three correct for 1 mark the pattern <b>must not</b> end on the bottom row of the table
			<b>Total</b>		[6]	

6	a	120 000 J / 120 kJ (2)	[2]	<b>accept</b> 300 000 J for 1 mark <b>accept</b> 420 000 J for 1 mark <b>accept</b> 180 000 J for 1 mark <b>accept</b> $200 \times 600$ or $600 \times 200$ for 1 mark
	b	friction/air resistance (1) transfers kinetic energy to heat energy / some of the work energy is converted to heat (1)	[2]	<b>accept</b> counter/opposing force <b>ignore</b> sound (energy) <b>accept</b> becomes heat
		<b>Total</b>		[4]

Question		Expected Answers	Marks	Additional Guidance
7	a	friction (1) reaction (1)	[2]	one mark for each correct word
	b	40N (1)	[1]	
	c i	C (1)	[1]	
	ii	The momentum ... ... constant. <input type="checkbox"/> The reaction ... ... slows ... <input type="checkbox"/> There must be a force ... <input type="checkbox"/> The average speed ... ... less ... <input checked="" type="checkbox"/> (1)	[1]	
		<b>Total</b>	<b>[5]</b>	

8	a	the same as in the opposite direction to	[1]	both must be correct for the mark
	b	The velocity ... ... increases ... <input type="checkbox"/> The reaction ... ... slows ... <input type="checkbox"/> The weight ... ... momentum. <input checked="" type="checkbox"/> (1) The total energy ... ... same ... <input checked="" type="checkbox"/> (1) The counter force ... <input type="checkbox"/>	[2]	one mark for each correct answer
	c	20m (1)	[1]	
	d	A (1)	[1]	
		<b>Total</b>	<b>[5]</b>	

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