

Additional Science A

General Certificate of Secondary Education

Unit **A215/02**: Modules B4, C4, P4

Mark Scheme for June 2011

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Question		Answer	Mark	Guidance
1	a	<div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> </div> ... proteins that speed up chemical ... (1)	1	
	b	B (1)	1	
	c	decrease denatured shape	2	3 correct = 2 marks 2 correct = 1 mark 1 or 0 correct = 0 marks
Total			[4]	

Question		Answer	Mark	Guidance
2		any three from: water enters cells ; across cell membrane ; cells swell ; this is osmosis ;	3 max	credit correct explanation of concentration credit “partially permeable membrane” accept “burst” for swell
Total			[3]	

3		<div style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) </div> ... less than outside the cell	1	
Total			[1]	

4	a	hypothalamus hypothalamus vasoconstriction	1	all three needed for the mark
	b	<div style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div> It allows a more sensitive response.	1	
Total			[2]	

Question		Answer	Mark	Guidance	
5	a	ADH (1)	1	accept aldosterone or antidiuretic hormone	
	b	pituitary (1)	1		
	c	alcohol suppresses ADH production (1) produces greater volume / more dilute urine (1)	2		
Total			[4]		
6	a	$2\text{Fe} + 3\text{Cl}_2 \rightarrow 2\text{FeCl}_3$ (1)	1		
	b	halogen	1	all 3 boxes correct = 1 mark accept red or brown for bromine colour	
		chlorine			gas
		bromine			orange
		iodine	solid		
	c	NaCl (1)	1	ignore equations but give mark where NaCl is given as product	
Total			[3]		

Question		Answer	Mark	Guidance
	c	circles all approximately the same size they should be grouped together positive circles may only touch negative, and vice versa	1	There must be at least four circles; any extra circles must be correct credit any <u>correct</u> pattern of four circles, including chains ignore small gaps between circles accept variation in circle size so long as it doesn't look intentional
	d	conductivity measurement (1) of melt / solution [in water] (1)	2	credit any implication of conductivity a diagram is acceptable
Total			[7]	
8		F ⁻ Na ⁺ P	2	3 correct = 2 marks 2 or 1 correct = 1 mark a correct response must give the correct symbol <u>and</u> charge
Total			[2]	
9		any two: contains sodium ; plus other material ; extra lines are present ;	2 max	accept chlorine or chloride for "other material"
Total			[2]	
10	a	$\frac{1}{2} \times 50 \times 8^2$ (1)	1	
	b	any three from: GPE decreases ; because height (above ground) decreases ; KE increases ; as GPE is converted to KE / energy is conserved ;	3 max	credit "change in GPE not equal to increase in KE because some energy is transferred as heat"
Total			[4]	

Question			Answer	Mark	Guidance
11	a	i	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">C</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">D</div>	1	all three correct for the mark
		ii	5 N (1)	1	
	b		0.5 s (1)	1	
	c		Work done on the moving ball ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> ... friction on the ball from the ground ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	2	correct pattern for 2 marks one mistake for 1 mark A mistake is <ul style="list-style-type: none"> • a tick in the wrong place • a missing tick • an extra tick
Total				[5]	

Question		Guidance	Mark	Guidance
12	a	300 (kg m/s) (1)	1	
	b		2	straight line through 0,0 for one mark straight line passing through 50 m at 10 s for one mark
	c	<div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;">Pete's kinetic energy ...</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">... remains constant.</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">A force on Pete from the ground...</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">... heats up the air as he moves.</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">Pete's gravitational P.E ...</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">... increases steadily with time.</div> <div style="border: 1px solid black; padding: 5px; width: 45%;">... pushes him in the direction ...</div> </div>	2	correct pattern of lines for 2 marks one or two mistakes for 1 mark a mistake is <ul style="list-style-type: none"> • a line in the wrong place • a missing line • an extra line
Total			[5]	
Paper Total			[42]	

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