

Additional Science A (Twenty First Century)

General Certificate of Secondary Education **J631**

Mark Schemes for the Units

January 2009

J631/MS/R/09J

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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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GCSE Additional Science A Twenty First Century (J631)

MARK SCHEMES FOR THE UNITS

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Guidance for Examiners

1. Mark strictly to the mark scheme.
 2. Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise.
 3. Each separate marking point is indicated by a (1) at the end of that marking point.
 4. Abbreviations, annotations and conventions used in the detailed Mark Scheme:
 - ORA = or reverse argument
 - NOT = point that is not given credit
 - AW/owtte = alternative wording/or words to that effect: allow any expression that is clearly equivalent
 - / = alternative and acceptable answers for the same marking point
 - point = point must be present to gain the mark
 - (description) = description which need not be present to gain the mark
- E.g.
- mark scheme shows 'work done in lifting / (change in) gravitational potential energy'
- work done = 0 marks
- work done lifting = 1 mark
- change in potential energy = 0 marks
- gravitational potential energy = 1 mark
5. If a candidate alters his/her response, examiners should accept the alteration.
 6. The list principle: if a list of responses greater than the number requested is given, you work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, i.e. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.
 7. If an answer is crossed out but not replaced, mark the crossed out answer.

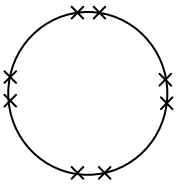
A215/01 Modules B4, C4, P4 Foundation

Question		Expected Answers	Marks	Rationale
1	(a)	<p>He will sweat less <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>He will start to shiver <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	2	1 mark for each correct choice more than 2 choices, each extra choice loses 1 mark
	(b) (i)	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>core body temperature is below 35 °C <input checked="" type="checkbox"/> (1)</p>	1	more than one tick = 0 marks
	(ii)	<p>confusion (1)</p> <p>drowsiness (1)</p> <p>slurred speech (1)</p>	3	1 mark for each choice allow any clear indication of correct choice more than 3 choices, then each extra choice loses 1 mark
Total			6	

Question		Expected Answers	Marks	Rationale								
2	(a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>C</td> <td>F</td> <td>B</td> <td>D</td> <td>A</td> <td>E</td> </tr> </table>	C	F	B	D	A	E	4	C before F = 1 mark F before B = 1 mark B before D = 1 mark D before A = 1 mark accept any clear indication of response .eg numbers at the side of the letters in the question		
C	F	B	D	A	E							
	(b) (i)	to replace water lost by sweating <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/> (1)</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/> (1)	<input type="checkbox"/>	1	more than one tick = 0 marks					
<input type="checkbox"/>												
<input checked="" type="checkbox"/> (1)												
<input type="checkbox"/>												
	(ii)	kidney (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks								
	(iii)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">increase in urine volume</th> <th style="text-align: center;">decrease in urine volume</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> </tr> <tr> <td></td> <td style="text-align: center;">C</td> </tr> <tr> <td></td> <td style="text-align: center;">D</td> </tr> </tbody> </table>	increase in urine volume	decrease in urine volume	A	B		C		D	2	all 4 correct = 2 marks 2 or 3 correct = 1 mark 1 response correct = 0 marks ignore letters appearing in both columns allow names of substances instead of letters any letter written on the middle line is wrong
increase in urine volume	decrease in urine volume											
A	B											
	C											
	D											
Total			8									

Question		Expected Answers	Marks	Rationale
3	(a)	<div style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) </div> <p>to kill microbes in the water</p>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	 <p>C D (1)</p>	1	both required for 1 mark any clear indication of correct response = 1 mark
	(c)	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">sodium chloride</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">potassium chloride</div> </div> <div style="margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">KCl</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">KCl₂</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">NaCl</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">NaCl₂</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">PCl</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">PCl₂</div> </div> </div> <p>Diagram description: A box labeled 'sodium chloride' has lines connecting to 'KCl' and 'NaCl'. A box labeled 'potassium chloride' has lines connecting to 'KCl' and 'NaCl'.</p>	2	if more than two lines are drawn each extra line loses 1 mark 1 mark for each correct line any clear indication of correct response eg formula written in or underneath the name boxes

Question		Expected Answers	Marks	Rationale
3	(d)		4	<p>mark each side independently</p> <p>left hand side: if more than three lines are drawn each extra line cancels one correct line three lines correct = 2 marks two lines correct = 1 mark one line correct = 0 marks</p> <p>right hand side: if more than three lines are drawn each extra line cancels one correct line three lines correct = 2 marks two lines correct = 1 mark one line correct = 0 marks</p>
	(e)	bromine (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
Total			9	

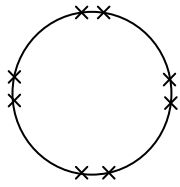
Question		Expected Answers	Marks	Rationale
4	(a)	D (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	A (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(c)	8 electrons in outer shell any arrangement e.g.  (1)	1	any clear indication of correct response = 1 mark spacing of the 8 electrons is irrelevant the same symbol does not have to be used for all 8 electrons eg 7 crosses and 1 dot gets the mark
Total			3	
5	(a)	some copper has got into the flame <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1	more than one response = 0 marks
	(b)	C (1)	1	accept any clear indication of response more than one response = 0 marks
Total			2	

Question		Expected Answers	Marks	Rationale
6	(a)	100/8 (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	C (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(c)	equal to (1) opposite (1)	2	both correct = 2 marks one correct = 1 mark
	(d)	<p style="text-align: center;">to increase the time it takes ...</p> <div style="display: flex; justify-content: center; gap: 10px;"> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
Total			5	

7	(a)	weight (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	600×20 (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(c)	gravitational potential (1) momentum (1)	2	both correct = 2 marks one correct = 1 mark
	(d)	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 20px;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">weight</div> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;">vertically down</div> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 20px; width: 100px; text-align: center;">vertically up</div> <div style="display: flex; align-items: center; margin-bottom: 20px;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">friction</div> <div style="border: 1px solid black; padding: 5px; margin-left: 10px;">up the slope</div> </div> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">down the slope</div> </div>	1	both lines correct = 1 mark of more than two lines drawn = 0 marks
Total			5	

Question		Expected Answers	Marks	Rationale
8	(a)	<p>when the ball is moving upwards</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	increases decreases increases stays the same	3	four correct = 3 marks three correct = 2 marks two correct = 1 marks one correct = 0 marks
Total			4	

A215/02 Modules B4, C4, P4 Higher

Question			Expected Answers	Marks	Rationale
1	(a)	(i)	D (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
		(ii)	A (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)		8 electrons in outer shell any arrangement e.g.  (1)	1	any clear indication of the correct response = 1 mark spacing of the 8 electrons is irrelevant the same symbol does not need to be used for all 8 electrons e.g. 7 crosses and 1 dot gets the mark
			Total	3	
2	(a)		C (1)	1	any clear indication of the correct response = 1 mark more than one response = 0 marks
	(b)		C and E (1)	1	either order
			Total	2	

Question			Expected Answers	Marks	Rationale
3	(a)	(i)	Salma (1)	1	more than 1 choice = 0 marks
		(ii)	Julia (1)	1	more than 1 choice = 0 marks
	(b)		NaBrO ₃ (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(c)	(i)	OCF (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
		(ii)	left side: 4 (1) right side: 2 (1)	2	mark each side of the equation independently allow O ₂ in the right hand box as an alternative to 2, ignoring any other numbers
	(d)		2ClO ₂ [aq] → Cl ₂ [g] + 2O ₂ [g]	3	all species correct = 1 mark i.e. Cl ₂ and O ₂ on the right hand side balanced = 1 mark all state symbols = 1 mark
			Total	9	

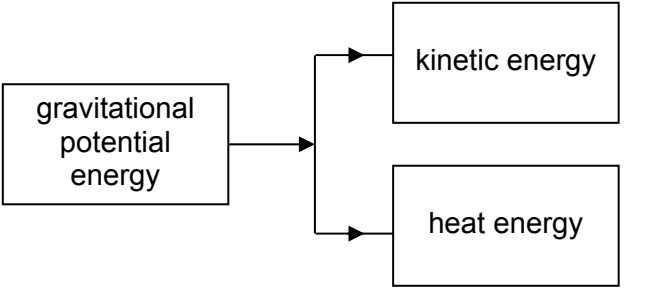
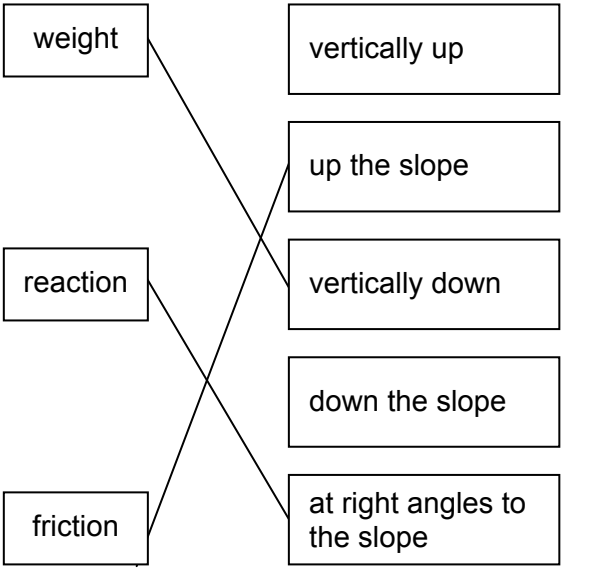
Question		Expected Answers	Marks	Rationale						
4	(a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">C</td> <td style="padding: 5px;">F</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">A</td> <td style="padding: 5px; background-color: #cccccc;">E</td> </tr> </table>	C	F	B	D	A	E	4	C before F = 1 mark F before B = 1 mark B before D = 1 mark D before A = 1 mark accept any clear indication of response e.g. numbers at the side of the letters in the question
C	F	B	D	A	E					
	(b)	<div style="text-align: right; margin-right: 20px;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input checked="" type="checkbox"/> (1) </div> <p>... best at an optimum temperature.</p> <p>... stop working at high temperatures.</p>	2	if more than 2 choices, deduct 1 mark for each extra choice						
	(c)	dilate (1) increases (1) increases (1) vasodilation (1)	4	only one choice allowed per sentence						
Total			10							

Question		Expected Answers	Marks	Rationale
5	(a)	<p>To keep the cell contents ...</p> <p style="text-align: right;"> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </p>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
5	(b)	<pre> graph TD A1[blood salt concentration rises] --> B1[more ADH is secreted] A2[blood salt concentration falls] --> B1 A3[blood sugar concentration rises] --> B2[less ADH is secreted] A4[blood sugar concentration falls] --> B2 B1 --> C1[a small amount of concentrated urine is made] B1 --> C2[a small amount of dilute urine is made] B2 --> C3[a large volume of concentrated urine is made] B2 --> C4[a large volume of dilute urine is made] </pre>	2	mark each side independently 1 mark for 2 correct lines on LHS 1 mark for 2 correct lines on RHS more than two lines drawn on a side = 0 marks for that side

Question		Expected Answers	Marks	Rationale
5	(c)	<p>A process that reverses ...</p> <p style="text-align: center;"> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </p>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
Total			4	

Question		Expected Answers	Marks	Rationale
6	(a)	<p>when the ball is moving upwards</p> <p style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </p>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	<p>increases decreases increases stays the same</p>	3	four correct = 3 marks three correct = 2 marks two correct = 1 mark one correct = 0 marks
Total			4	

Question		Expected Answers	Marks	Rationale
7	(a)	200 N (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(b)	B (1)	1	any clear indication of correct response = 1 mark more than one response = 0 marks
	(c)	driving counter driving counter	2	treat as two pairs of responses both pairs correct = 2 marks only one pair correct = 1 mark
	(d)	It increases the duration ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1	any clear indication of correct response = 1 mark more than one response = 0 marks
Total			5	

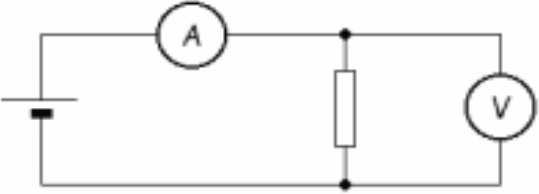
Question	Expected Answers	Marks	Rationale
8 (a)	 <pre> graph LR A[gravitational potential energy] --> B[kinetic energy] A --> C[heat energy] </pre>	1	<p>allow kinetic and heat energy either way round all 3 required for 1 mark allow GPE for gravitational potential energy</p>
(b)	$\frac{7800}{650} \quad (1)$	1	any clear indication of correct response = 1 mark more than one response = 0 marks
(c)	Bess (1)	1	any clear indication of correct response = 1 mark e.g. 12m/s more than one response = 0 marks
(d)	 <pre> graph LR W[weight] --- VU[vertically up] R[reaction] --- VD[vertically down] F[friction] --- AS[at right angles to the slope] </pre>	2	three correct lines = 2 marks two correct lines = 1 mark one or no correct lines = 0 marks
Total		5	

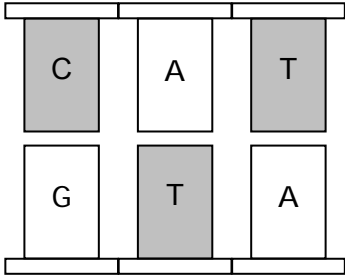
A216/01 Modules B5, C5, P5 Foundation

Question		Expected Answers					Marks	Rationale																				
1	(a)	<table border="1"> <thead> <tr> <th>substance</th> <th>atmos</th> <th>bio</th> <th>hydro</th> <th>litho</th> </tr> </thead> <tbody> <tr> <td>liquid water</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>sand</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>CO₂ gas</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					substance	atmos	bio	hydro	litho	liquid water			✓		sand				✓	CO ₂ gas	✓				2	mark each row separately all rows correct = 2 marks two rows correct = 1 mark one or no row correct = 0 marks
		substance	atmos	bio	hydro	litho																						
		liquid water			✓																							
		sand				✓																						
CO ₂ gas	✓																											
Thomas (1)					2	either order																						
Ruth (1)																												
Total					4																							
2	A	B (1)					1	if answer line blank, accept any clear indication of correct letter																				
	B	A (1)					1	if answer line blank, accept any clear indication of correct letter																				
	C	D (1)					1	if answer line blank, accept any clear indication of correct letter																				
	D	E (1)					1	if answer line blank, accept any clear indication of correct letter																				
	Total					4																						

Question		Expected Answers	Marks	Rationale					
3	(a)	<p>electrons move through the copper wires</p> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	1						
	(b) (i)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">A</td> <td style="padding: 5px;">C</td> <td style="padding: 5px;">E</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">D</td> </tr> </table>	A	C	E	B	D	2	<p>A anywhere before C C anywhere before E E anywhere before B</p> <p>all correct = 2 mark 2 correct = 1 mark 1 or 0 correct = 0 marks</p>
A	C	E	B	D					
	(ii)	CDA	1						
	(c)	<p>Gold is a good electrical conductor <input checked="" type="checkbox"/> (1)</p> <input type="checkbox"/> <p>Gold does not corrode <input checked="" type="checkbox"/> (1)</p> <input type="checkbox"/> <input type="checkbox"/>	2						
Total			6						

Question	Expected Answers	Marks	Rationale
4 (a)		2	1 mark for each if boxes blank, accept any clear indication of correct answer for each box allow bulb or light for lamp
(b)	series (1) current (1)	2	if answer lines blank, accept any clear indication of correct word for each space
(c)	<p>It reduces the flow of charge through the circuit</p> <div style="display: flex; align-items: center;"> <input style="margin-right: 5px;" type="checkbox"/> <input checked="" style="margin-right: 5px;" type="checkbox"/> (1) <input style="margin-right: 5px;" type="checkbox"/> <input style="margin-right: 5px;" type="checkbox"/> </div>	1	
Total		5	

Question		Expected Answers	Marks	Rationale								
5	(a)		2	A = 1 mark V = 1 mark if circles blank, accept any clear indication of correct answer for each circle								
	(b)	voltage (1)	1									
	(c)	<table border="1"> <thead> <tr> <th>decrease</th> <th>increase</th> <th>stays same</th> </tr> </thead> <tbody> <tr> <td></td> <td>✓</td> <td></td> </tr> <tr> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	decrease	increase	stays same		✓			✓		2
decrease	increase	stays same										
	✓											
	✓											
Total			5									
6	(a)	The joule is a very small amount of energy <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1									
	(b) (i)	2.1 x 3 x 8 (1)	1	accept "50.4" if response not clear								
	(b) (ii)	Alan (1)	1	if answer line blank, accept any clear indication allow $\frac{6}{2.1 \times 3} \times 100$ instead of 'Alan'								
	(c)	charge (1)	1	if answer line blank, accept any clear indication of correct letter								
	Total			4								

Question	Expected Answers	Marks	Rationale
7 (a)	<p>genes are made of DNA <input type="checkbox"/> (1)</p> <p>DNA is a set of instructions for making proteins <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	2	
(b)		2	all correct = 2 marks one or two correct = 1 mark
(c)	<p>Genes that are not needed are switched off <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	1	
Total		5	

Question		Expected Answers		Marks	Rationale								
8	(a)	<table border="1"> <thead> <tr> <th>mitosis</th> <th>meiosis</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>B</td> </tr> <tr> <td>D</td> <td>C</td> </tr> <tr> <td>E</td> <td></td> </tr> </tbody> </table>		mitosis	meiosis	A	B	D	C	E		2	<p>allow any order of responses within a column. do not mark any letter which appears in both columns</p> <p>all correct = 2 marks 4 or 3 correct = 1 mark 1 or 2 correct = 0 marks</p>
mitosis	meiosis												
A	B												
D	C												
E													
		<table border="1"> <tbody> <tr> <td>B</td> <td>D</td> <td>C</td> <td>A</td> </tr> </tbody> </table>		B	D	C	A	2	<p>D anywhere before C = 1 mark C anywhere before A = 1 mark repeated letters, apply strictly as above, e.g. ACA = 1 mark</p>				
B	D	C	A										
		Total		4									

Question			Expected Answers	Marks	Rationale
9	(a)	(i)	phototropism (1)	1	
		(ii)	allows plants to get more light <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	1	
	(b)	(i)	<input type="checkbox"/> some plant cells are unspecialised <input checked="" type="checkbox"/> (1) <input type="checkbox"/> unspecialised cells turn into root cells <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	2	
		(ii)	<input type="checkbox"/> It is a complete plant that is a clone of the parent plant. <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	1	
Total				5	

A216/02 Modules B5, C5, P5 Higher

Question		Expected Answers	Marks	Rationale
1	(a)	B (1)	1	if answer line blank, accept any clear indication of correct letter
	(s)	A (1)	1	if answer line blank, accept any clear indication of correct letter
	(d)	D (1)	1	if answer line blank, accept any clear indication of correct letter
	(f)	E (1)	1	if answer line blank, accept any clear indication of correct
Total			4	

2	(a)	<table border="1"> <thead> <tr> <th>element</th> <th>very common</th> <th>smaller amounts</th> </tr> </thead> <tbody> <tr> <td>carbon</td> <td>✓</td> <td></td> </tr> <tr> <td>hydrogen</td> <td>✓</td> <td></td> </tr> <tr> <td>nitrogen</td> <td>✓</td> <td></td> </tr> <tr> <td>oxygen</td> <td>✓</td> <td></td> </tr> <tr> <td>phosphorus</td> <td></td> <td>✓</td> </tr> <tr> <td>sulfur</td> <td></td> <td>✓</td> </tr> </tbody> </table>	element	very common	smaller amounts	carbon	✓		hydrogen	✓		nitrogen	✓		oxygen	✓		phosphorus		✓	sulfur		✓	2	<p>accept nitrogen in either column (so ignore nitrogen row)</p> <p>do not allow any other response which appears in both columns</p> <p>remaining 5 rows correct = 2 marks 4 correct = 1 mark 3 or less correct scores = 0 marks</p> <p>OR (ignoring Nitrogen line) no errors = 2 marks 1 error = 1 mark 2 or more errors = 0 marks</p>
element	very common	smaller amounts																							
carbon	✓																								
hydrogen	✓																								
nitrogen	✓																								
oxygen	✓																								
phosphorus		✓																							
sulfur		✓																							
	(b)	(i)	'H' approximately above the vertical line (1)	1	<p>the 'H' must be a capital letter allow 'H1' but not 'H1' do not allow alterations elsewhere in the formula</p>																				
		(ii)	C ₃ H ₇ O ₂ NS (1)	1	<p>numbers MUST be either smaller or subscripted allow elements in any order so long as their subscripts are correct accept C₃H₇O₂N₁S₁ (reject C₃H₇O₂N1S1) the subscripts on N₁ and S₁ are not normally used, but are not incorrect, so the mark can be awarded</p>																				
		(iii)	C (1)	1	accept any clear indication of box C																				
Total			5																						

Question		Expected Answers	Marks	Rationale
3	(a)	<p style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> electrons move between ions in the lattice <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </p>	1	
	(b)	[l], [l], [l], [g]	1	accept upper case letters, do not accept words (eg “gas”, “liquid”, “liq”)
	(c)	3, 2, 2	1	boxes must contain numbers only
	(d)	<p style="text-align: right;"> <input type="checkbox"/> Gold is less reactive than copper. <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Gold holds its outer electrons quite weakly. <input checked="" type="checkbox"/> (1) </p>	2	if answer line blank, accept any clear indication of correct letter if only 2 responses given, and one or both is then crossed out, mark both responses
Total			5	

Question		Expected Answers	Marks	Rationale
4	(a)	<div style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) </div> <p>The closed switch allows charge to flow through the lamp</p>	1	
	(b)	current (1) moving stationary (1)	2	first line correct = 1 mark second line correct = 1 mark allow oscillating instead of stationary
	(c)	3.0 × 1.5 (1)	1	
	(d)	the resistor keeps the current in the lamp at the correct value <div style="text-align: right;"> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>	1	
Total			5	

Question		Expected Answers	Marks	Rationale
5	(a)	The joule is a very small amount of energy <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1	
	(b) (i)	2.1 x 3 x 8 (1)	1	accept "50.4" if response not clear
	(ii)	Alan (1)	1	if answer line blank, accept any clear indication allow $\frac{6}{2.1 \times 3}$ x 100 instead of 'Alan'
	(c)	charge (1)	1	if answer line blank, accept any clear indication of correct letter
Total			4	

Question		Expected Answers	Marks	Rationale									
6	(a)	0.36 W (1)	1										
	(b)	<table border="1"> <thead> <tr> <th>decrease</th> <th>increase</th> <th>stays the same</th> </tr> </thead> <tbody> <tr> <td></td> <td>✓</td> <td></td> </tr> <tr> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	decrease	increase	stays the same		✓			✓		1	both rows correct = 1 mark
decrease	increase	stays the same											
	✓												
	✓												
	(c) (i)	<table border="1"> <thead> <tr> <th>decrease</th> <th>increase</th> <th>stays the same</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>✓</td> </tr> <tr> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	decrease	increase	stays the same			✓		✓		1	both lines correct = 1 mark
decrease	increase	stays the same											
		✓											
	✓												
	(ii)	<p>Both resistors have the same potential difference across them <input type="checkbox"/> (1)</p> <p style="margin-left: 200px;"><input checked="" type="checkbox"/></p> <p style="margin-left: 200px;"><input type="checkbox"/></p> <p style="margin-left: 200px;"><input type="checkbox"/></p> <p>both resistors have the same current <input checked="" type="checkbox"/> (1)</p> <p style="margin-left: 200px;"><input type="checkbox"/></p>	2	both ticks correct = 2 marks one correct = 1 mark if more than two ticks: (6 rows correct = 2 marks) 5 rows correct = 1 mark 4 rows correct = 0									
Total			5										

Question		Expected Answers	Marks	Rationale								
7	(a)	<table border="1"> <thead> <tr> <th>mitosis</th> <th>meiosis</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>B</td> </tr> <tr> <td>D</td> <td>C</td> </tr> <tr> <td>E</td> <td></td> </tr> </tbody> </table>	mitosis	meiosis	A	B	D	C	E		2	<p>allow any order of responses within a column do not mark any letter which appears in both columns</p> <p>all correct = 2 marks 4 or 3 correct = 1 mark 1 or 2 correct = 0 marks</p>
mitosis	meiosis											
A	B											
D	C											
E												
		<table border="1"> <tbody> <tr> <td>B</td> <td>D</td> <td>C</td> <td>A</td> </tr> </tbody> </table>	B	D	C	A	2	<p>D anywhere before C = 1 mark C anywhere before A = 1 mark repeated letters apply strictly as above, e.g. ACA = 1 mark</p>				
B	D	C	A									
		Total	4									

Question		Expected Answers	Marks	Rationale																					
8	(a)	<table border="1"> <thead> <tr> <th>statement</th> <th>true</th> <th>false</th> </tr> </thead> <tbody> <tr> <td>four bases</td> <td>✓</td> <td></td> </tr> <tr> <td>order not important</td> <td></td> <td>✓</td> </tr> <tr> <td>DNA in cytoplasm</td> <td></td> <td>✓</td> </tr> <tr> <td>bases pair up differently</td> <td></td> <td>✓</td> </tr> <tr> <td>copy of DNA into cytoplasm</td> <td>✓</td> <td></td> </tr> <tr> <td>order of bases determines amino acid order</td> <td>✓</td> <td></td> </tr> </tbody> </table>	statement	true	false	four bases	✓		order not important		✓	DNA in cytoplasm		✓	bases pair up differently		✓	copy of DNA into cytoplasm	✓		order of bases determines amino acid order	✓		3	<p>accept any unambiguous response</p> <p>all correct = 3 marks 5 or 4 rows correct = 2 marks 3 or 2 rows correct = 1 mark 1 row correct = 0 marks</p> <p>or</p> <p>all correct = 3 marks 1 or 2 errors = 2 marks 3 or 4 errors = 1 mark 5 or 6 errors = 0 marks</p>
	statement	true	false																						
four bases	✓																								
order not important		✓																							
DNA in cytoplasm		✓																							
bases pair up differently		✓																							
copy of DNA into cytoplasm	✓																								
order of bases determines amino acid order	✓																								
(b)	<p style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> TAAGCCTGT <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </p>	1																							
Total			4																						

Question		Expected Answers	Marks	Rationale
9		meristems (1) auxins (1) clones (1)	3	must be in correct order
Total			3	

Question	Expected Answers	Marks	Rationale
10	<input type="checkbox"/> Up to the eight cell stage ... <input checked="" type="checkbox"/> Specialised cells can ... <input checked="" type="checkbox"/> <input type="checkbox"/> Some genes in the nucleus ... <input checked="" type="checkbox"/> <input type="checkbox"/> Both embryonic and adult ... <input checked="" type="checkbox"/>	3	7 or 6 correct = 3 marks 5 or 4 correct = 2 marks 3 correct = 1 mark 2 or 1 correct = 0 marks
Total		3	

A217/01 Modules B6, C6, P6 Foundation

Question		Expected Answers	Marks	Rationale
1	(a)	radio (1)	1	accept any other clear indication of correct response e.g. tick, underlined etc
	(b)	decreases (1) reflect (1) increases (1)	3	more than one response for each marking point = 0 marks accept any other clear indication of correct response e.g. linking line
	(c)	infrared (1)	1	accept any other clear indication of correct response e.g. tick, underlined etc.
Total			5	

2	(a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px; text-align: center;">M</td> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px; text-align: center;">V</td> <td style="width: 30px; height: 30px; text-align: center;">UV</td> <td style="width: 30px; height: 30px; text-align: center;">X</td> <td style="width: 30px; height: 30px;"></td> </tr> </table> <p style="text-align: right;">(1)</p>		M		V	UV	X		1	ignore other responses in the 3 remaining boxes UV must appear only once more than one response = 0 marks accept other clear responses in the UV box eg. tick
	M		V	UV	X						
	(b)	Bess (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, linking line etc							
	(c)		2	both lines correct for (2) one line correct for (1) more than one line from a single box – deduct one mark							

Question		Expected Answers	Marks	Rationale
2	(d)	longitudinal transverse empty space air	2	all 4 correct = 2 marks 2 or 3 correct = 1 mark 1 or 0 correct = 0 marks
Total			6	
3	(a)	wavelength (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, linking line, underlined etc
	(b)	B (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, linking line, underlined etc
	(c)	interference (1) in step (1) increases (1)	3	more than one response for a single marking point = 0 marks accept any other clear indication of correct response e.g. tick, underlined etc
Total			5	
4	(a)	(i) C (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, underlined, ring or linking line to dotted line or diagram etc
		(ii) B (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, underlined etc
	(b)	<div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> </div> as an electrical impulse (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. cross, shaded or linking line etc

Question		Expected Answers	Marks	Rationale				
4	(c)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: #cccccc;">C</td> <td>B</td> <td>A</td> <td>D</td> </tr> </table>	C	B	A	D	2	B anywhere before A = 1 mark A anywhere before D = 1 mark
C	B	A	D					
	(d)	a receptor (1) an effector (1)	2	more than one response = 0 marks accept any other clear indication of correct response e.g. linking line				
Total			7					

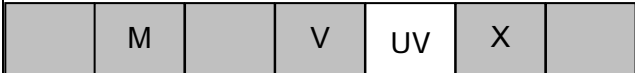
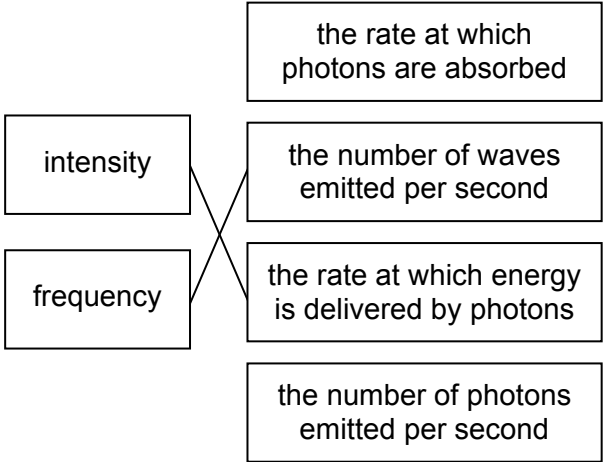
5			2	all three lines correct = 2 marks two or one line correct = 1 mark more than one line from a single box, deduct one mark
Total			2	

Question		Expected Answers	Marks	Rationale
6	(a)	<p>Edward's short term memory has been damaged. <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>Remembering his school friends is a long term memory. <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	2	more than two responses, deduct 1 mark accept any other clear indication of correct response e.g. crosses, shading, linking lines etc
	(b)	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>cerebral cortex <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	1	more than one response = 0 marks accept any other clear indication of correct response e.g. cross, shading, linking line etc
		Total	3	

Question		Expected Answers	Marks	Rationale						
7	(a)	6 g (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, underlined etc						
	(b)	Elizabeth (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, linking line etc						
	(c)	25 % (1)	1	more than one response = 0 marks accept any other clear indication of correct response e.g. tick, underlined etc						
Total			3							
8	(a)	carbon dioxide (1) sodium chloride (1)	2	phonetically correct answers = 2 marks not sodium chlorine or carbon oxygen						
	(b)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="background-color: #cccccc;">E</td> <td style="background-color: #cccccc;">B</td> <td>A</td> <td>C</td> <td>D</td> <td>F</td> </tr> </table>	E	B	A	C	D	F	2	A anywhere before C C anywhere before D D anywhere before F all stages correct = 2 marks 2 or 3 stages correct = 1 mark 1 or 0 stages correct = 0 marks
E	B	A	C	D	F					
	(c)	i	A and E (1)	1	more than two responses = 0 marks any order					
		ii	C and D (1)	1	more than two responses = 0 marks any order					
Total			6							

Question		Expected Answers			Marks	Rationale												
9	(a)	<table border="1"> <thead> <tr> <th>chemical used up</th> <th>chemical produced</th> <th>catalyst</th> </tr> </thead> <tbody> <tr> <td>nitrogen hydrogen</td> <td>ammonia</td> <td>iron</td> </tr> </tbody> </table>			chemical used up	chemical produced	catalyst	nitrogen hydrogen	ammonia	iron	2	<p>all 3 boxes correct = 2 marks 2 boxes correct = 1 mark 1 or 0 boxes correct = 0 marks</p> <p>or</p> <p>accept iron in all 3 = 1 mark</p> <table border="1"> <thead> <tr> <th>chemical used up</th> <th>chemical produced</th> <th>catalyst</th> </tr> </thead> <tbody> <tr> <td>nitrogen hydrogen iron</td> <td>ammonia iron</td> <td>iron</td> </tr> </tbody> </table>	chemical used up	chemical produced	catalyst	nitrogen hydrogen iron	ammonia iron	iron
chemical used up	chemical produced	catalyst																
nitrogen hydrogen	ammonia	iron																
chemical used up	chemical produced	catalyst																
nitrogen hydrogen iron	ammonia iron	iron																
	(b)	change in pressure (1)			1	<p>more than one response = 0 marks</p> <p>accept any other clear indication of correct response e.g. tick, underlined etc</p>												
	(c)	<table border="1"> <tr> <td rowspan="5"> use a lower pressure re-cycle unreacted gases </td> <td>less waste to dispose of</td> </tr> <tr> <td>less acid rain is made</td> </tr> <tr> <td>vessels don't have to be as strong</td> </tr> <tr> <td>less damage to the ozone layer</td> </tr> <tr> <td>less space is needed for the factory</td> </tr> </table>			use a lower pressure re-cycle unreacted gases	less waste to dispose of	less acid rain is made	vessels don't have to be as strong	less damage to the ozone layer	less space is needed for the factory	2	<p>both lines correct = 2 marks one line correct = 1 mark more than one line from a single box, deduct one mark</p>						
use a lower pressure re-cycle unreacted gases	less waste to dispose of																	
	less acid rain is made																	
	vessels don't have to be as strong																	
	less damage to the ozone layer																	
	less space is needed for the factory																	
		Total			5													

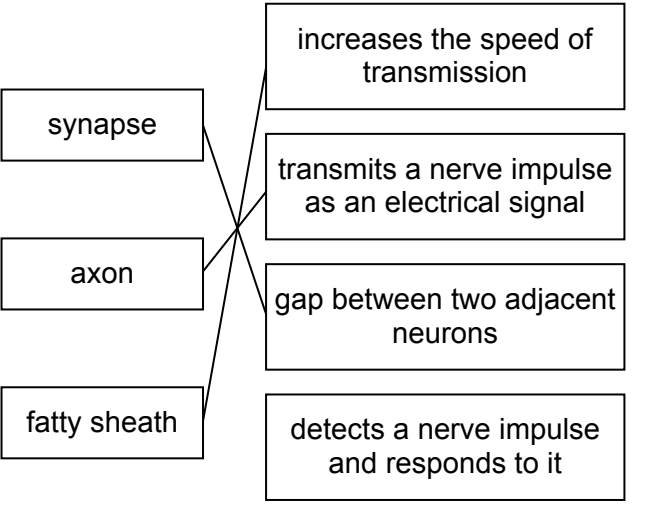
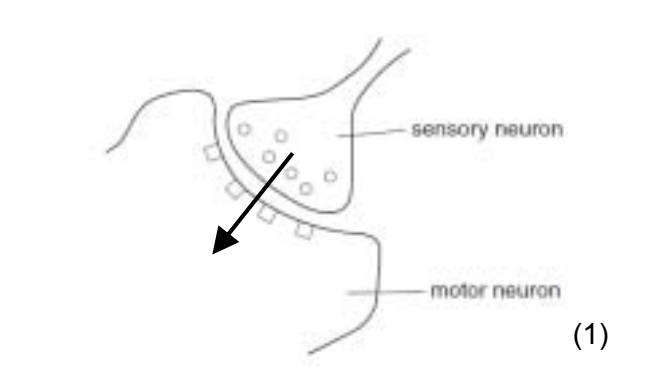
A217/02 Modules B6, C6, P6 Higher

Question		Expected Answers	Marks	Rationale
1	(a)	 <p style="text-align: right;">(1)</p>	1	<p>ignore other responses in the 3 remaining boxes UV must appear only once more than one response = 0 marks accept other clear responses in the UV box eg. tick</p>
	(b)	Bess (1)	1	
	(c)		2	<p>correct pattern = 2 marks one mistake = 1 mark</p> <p>a mistake is:</p> <ul style="list-style-type: none"> • a missing line • a line in the wrong place • an extra line
		Total	4	

Question		Expected Answers	Marks	Rationale										
2	(a)	wavelengths (1)	1	allow frequencies										
	(b)	diffraction (1)	1											
	(c)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>B</td> <td>C</td> <td>A</td> <td>E</td> </tr> </table>	B	C	A	E	3	starts with B = 1 mark ends with E for = 1 mark second and third C then A = 1 mark						
B	C	A	E											
Total			5											
3	(a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>statement</th> <th>true or false</th> </tr> </thead> <tbody> <tr> <td>dish increases the intensity</td> <td>true</td> </tr> <tr> <td>signals strongly absorbed</td> <td>false</td> </tr> <tr> <td>the dish removes noise</td> <td>false</td> </tr> <tr> <td>dish is made of metal</td> <td>true</td> </tr> </tbody> </table>	statement	true or false	dish increases the intensity	true	signals strongly absorbed	false	the dish removes noise	false	dish is made of metal	true	2	all four correct = 2 marks three or two correct = 1 mark allow T and F, but not ticks, crosses or gaps
statement	true or false													
dish increases the intensity	true													
signals strongly absorbed	false													
the dish removes noise	false													
dish is made of metal	true													

Question	Expected Answers	Marks	Rationale
(b)	Andrew (1)	1	
(c)	<div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">radio</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">sound</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">infrared</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">uv</div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: 50px;">waves are used in optical fibres</div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: 100px;">their photons are easily diffracted in the glass</div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: 100px;">their photons travel faster than the others through the glass</div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: 100px;">their photons don't carry enough energy to damage the glass</div> <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: 100px;">their photons travel a long way through the glass before being absorbed</div>	2	<p>correct pattern = 2 marks one mistake = 1 mark</p> <p>a mistake is:</p> <ul style="list-style-type: none"> • a missing line • a line in the wrong place • an extra line
Total		5	

Question		Expected Answers				Marks	Rationale																				
4	(a)	<table border="1"> <thead> <tr> <th>structures</th> <th>only CNS</th> <th>only PNS</th> <th>both CNS and PNS</th> </tr> </thead> <tbody> <tr> <td>brain</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>motor neuron</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>sensory neuron</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>spinal cord</td> <td>✓</td> <td></td> <td></td> </tr> </tbody> </table>				structures	only CNS	only PNS	both CNS and PNS	brain	✓			motor neuron		✓		sensory neuron			✓	spinal cord	✓			2	all four rows correct (2) any two or three rows correct (1) a correct row has only one tick in the correct place accept any unambiguous response
structures	only CNS	only PNS	both CNS and PNS																								
brain	✓																										
motor neuron		✓																									
sensory neuron			✓																								
spinal cord	✓																										
	(b)	<table border="1"> <tr> <td style="background-color: #cccccc;">C</td> <td>B</td> <td>A</td> <td>D</td> </tr> </table>				C	B	A	D	2	B anywhere before A = 1 mark A anywhere before D = 1 mark																
C	B	A	D																								
		Total				4																					

Question	Expected Answers	Marks	Rationale
<p>5 (a)</p>	 <p>The diagram shows four boxes on the left: 'synapse', 'axon', 'fatty sheath', and 'detects a nerve impulse and responds to it'. On the right, there are three boxes: 'increases the speed of transmission', 'transmits a nerve impulse as an electrical signal', and 'gap between two adjacent neurons'. Lines connect 'synapse' to the top two boxes, 'axon' to the middle and bottom boxes, and 'fatty sheath' to the top box.</p>	<p>3</p>	<p>correct pattern for (3) one mistake for (2) two mistakes for (1)</p> <p>a mistake is:</p> <ul style="list-style-type: none"> • a missing line • a line in the wrong place • an extra line
<p>(b)</p>	 <p>The diagram shows a synapse between a 'sensory neuron' and a 'motor neuron'. An arrow points from the sensory neuron towards the motor neuron. The number '(1)' is written below the diagram.</p>	<p>1</p>	<p>accept an arrow (anywhere) pointing from top to bottom and right to left</p>

Question		Expected Answers	Marks	Rationale
5	(c)	<p>Ecstasy blocks the sites where serotonin is removed. <input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>The serotonin concentration increases, which enhances mood. <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	2	<p>correct pattern = 2 marks one mistake for = 1 mark</p> <p>a mistake is:</p> <ul style="list-style-type: none"> • a missing tick • a tick in the wrong place • an extra tick
		Total	6	

Question	Expected Answers	Marks	Rationale
(b)	<div style="text-align: right; margin-right: 20px;"> <input type="checkbox"/> <input type="checkbox"/> cerebral cortex <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div>	1	correct pattern = 1 mark
(c)		2	correct pattern = 2 marks one or two mistakes = 1 mark a mistake is: <ul style="list-style-type: none"> • a missing line • a line in the wrong place • an extra line
6 (a)	<div style="text-align: right; margin-right: 20px;"> <input type="checkbox"/> <input type="checkbox"/> There is a pattern in the notes that he can recognise <input checked="" type="checkbox"/> (1) <input type="checkbox"/> Repeating the same action makes new pathways in the brain <input checked="" type="checkbox"/> (1) </div>	2	correct pattern = 2 marks one mistake = 1 mark a mistake is: <ul style="list-style-type: none"> • a missing tick • a tick in the wrong place • an extra tick
Total		5	

Question		Expected Answers	Marks	Rationale
7	(a)	change in pressure (1)	1	
	(b)	<div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">use a lower pressure</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">re-cycle unreacted gases</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">less waste to dispose of</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">less acid rain is made</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">vessels don't have to be as strong</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">less damage to the ozone layer</div> <div style="border: 1px solid black; padding: 5px;">less space is needed for the factory</div> </div>	2	<p>correct pattern = 2 marks one mistake = 1 mark</p> <p>a mistake is:</p> <ul style="list-style-type: none"> • a missing line • a line in the wrong place • an extra line
		Total	3	

Question		Expected Answers	Marks	Rationale
8	(a)	2 NaHCO ₃ 2 H ₂ O 2 CO ₂	2	first one correct= 1 mark last two correct= 1 mark
	(b)	0.2 (g) (1)	1	
	(c)	D (1) F (1)	2	any order
	(d)	less than 95 % (1)	1	
	(e)	84 (g) (1)	1	
	(f) (i)	0.035 (1)	1	
	(ii)	7 (1)	1	
	(iii)	<div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) </div> <p>the collision frequency between acid and the solid is less</p>	1	correct pattern = 1 mark
Total			10	

Grade Thresholds

General Certificate of Secondary Education
 Additional Science A (Specification Code J631)
 January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
A215/01	Raw	42	N/A	N/A	N/A	27	23	20	17	14	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A215/02	Raw	42	30	26	21	17	13	11	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A216/01	Raw	42	N/A	N/A	N/A	26	22	19	16	13	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A216/02	Raw	42	34	30	25	21	16	13	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A217/01	Raw	42	N/A	N/A	N/A	25	21	17	13	9	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A217/02	Raw	42	34	30	25	20	15	12	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J631	300	270	240	210	180	150	120	90	60	0

The cumulative percentage of candidates awarded each grade was as follows:

	A*	A	B	C	D	E	F	G	U	Total No. of Cands
J631	13.6	36.4	45.5	72.7	90.9	100.0	100.0	100.0	100.0	22

For a description of how UMS marks are calculated see:

http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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