

## **Biology A**

General Certificate of Secondary Education

Unit **A221/01**: Unit 1: Modules B1, B2, B3 (Foundation Tier)

## **Mark Scheme for January 2011**

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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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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## Guidance for Examiners

Additional Guidance within any mark scheme takes precedence over the following guidance.

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. Accept any clear, unambiguous response which is correct, eg mis-spellings if phonetically correct (but check additional guidance).
4. Abbreviations, annotations and conventions used in the detailed mark scheme:

/	= alternative and acceptable answers for the same marking point
(1)	= separates marking points
<b>not/reject</b>	= answers which are not worthy of credit
<b>ignore</b>	= statements which are irrelevant - applies to neutral answers
<b>allow/accept</b>	= answers that can be accepted
(words)	= words which are not essential to gain credit
<u>words</u>	= underlined words must be present in answer to score a mark
ecf	= error carried forward
AW/owtta	= alternative wording
ORA	= or reverse argument

*eg mark scheme shows 'work done in lifting / (change in) gravitational potential energy' (1)*

*"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. Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

The example below illustrates how to apply this principle to an objective question.

*eg for a one mark question, where ticks in boxes 3 and 4 are required for the mark*

Put ticks (✓) in the two correct boxes.

✓	
✗	

*This would be worth zero marks.*

Put ticks (✓) in the two correct boxes.

✗	
✓	

*This would be worth one mark.*

Put ticks (✓) in the two correct boxes.

✗	
✗	
	✓
	✓

*This would be worth one mark.*

## 7. The list principle:

If a list of responses greater than the number requested is given, 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, eg 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.

## 8. Marking method for tick boxes:

Always check the additional guidance.

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.

If there is at least one tick, ignore crosses. If there are no ticks, accept clear, unambiguous indications, eg shading or crosses.

Credit should be given for each box correctly ticked. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

*eg if a question requires candidates to identify a city in England, then in the boxes*

Edinburgh	
Manchester	
Paris	
Southampton	

*the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third should be blank (or have indication of choice crossed out).*

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	✗	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	✗		✓		✓	✓		✓	
<b>Score:</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NR</b>

Question		Expected Answers	Marks	Additional Guidance
1	a	one copy (1) the same (1) alleles (1)	[3]	
	b	<b>any two from:</b> idea of half the alleles from each parent; idea of different genes/alleles/chromosomes ( produce different results); correct example of environmental factor;	[2]	<b>accept</b> max. 1 = environmental factor
<b>Total</b>		<b>[5]</b>		

Question		Expected Answers	Marks	Additional Guidance
2	a i	idea that cystic fibrosis has only 1 or 2 genes or alleles (1) idea that eye colour has multiple or more genes or alleles (1)	[2]	<b>accept</b> continuous (eye colour) and discontinuous (CF) variation <b>ignore</b> any reference to dominant and recessive
	ii	<b>any two from:</b> thick/sticky mucus or mucus build up; cough / lung infections; breathing problems; sterility; digestive problems / poor growth;	[2]	
	b	<b>any two from:</b> whether or not to have children (1) whether to terminate pregnancy (1) chance of miscarriage / harm fetus; risk of test eg infection; test may give false result so still unsure/unreliable; may affect (life) insurance; whether or not to have gene therapy;	[2]	<b>ignore</b> non implications eg a fetus cannot make the decision <b>ignore</b> do not want to know / causes stress / can plan your life  <b>ignore</b> can receive treatment
c	i	Mandy (1)	[1]	
	ii	Dan (1)	[1]	
<b>Total</b>		<b>[8]</b>		

Question		Expected Answers	Marks	Additional Guidance
3	a	i 3 and 5 (1)	[1]	<b>both</b> required for mark <b>accept</b> either way round
	ii	3 - it encourages the body to make <u>antibodies/antitoxin</u> to destroy the virus / owtte (1) 5 - the new vaccine would enable the body to destroy the flu (virus) entering the body(1)	[2]	Mark whole of this response independently of 3ai OWTTE accept either way round  OWTTE accept either way round For sentence 5 look for the idea that the vaccine would not work on any other virus i.e. just the flu virus  <b>reject</b> idea that vaccine stops flu virus entering the body
	b	Vaccines can never be ...  <input checked="" type="checkbox"/> (1)  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  Once the body has made the ...  <input checked="" type="checkbox"/> (1)  <input type="checkbox"/>  Symptoms of the disease are ...  <input checked="" type="checkbox"/> (1)	[3]	
		Total	[6]	

Question		Expected Answers	Marks	Additional Guidance
4	a	<p>Antibiotics do not work ...</p> <p>Steve's sore throat is not ...</p>	[2]	
	b	<p>To stop the bacteria becoming ...</p>	[1]	
	c	<p><b>C, E and A</b> (in the three boxes) (1)</p> <p><b>C, E and A</b> in correct order (1)</p>	[2]	

Question		Expected Answers	Marks	Additional Guidance
4	d	<input type="checkbox"/> ... not been peer reviewed ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ... have not been repeated ... <input checked="" type="checkbox"/> (1)	[2]	
		<b>Total</b>	<b>[7]</b>	

Question			Expected Answers			Marks	Additional Guidance								
5	a		<p>blood vessel</p> <table> <thead> <tr> <th>feature</th> <th>function</th> </tr> </thead> <tbody> <tr> <td>valves along its length</td> <td>allow blood to flow easily</td> </tr> <tr> <td>muscular wall</td> <td>maintain blood pressure</td> </tr> <tr> <td>large lumen</td> <td>stop blood flowing backwards</td> </tr> </tbody> </table>	feature	function	valves along its length	allow blood to flow easily	muscular wall	maintain blood pressure	large lumen	stop blood flowing backwards		[2]		<p>1 mark for left hand side correct 1 mark for right hand side correct <b>Allow 1 mark for any three correct lines</b></p>
feature	function														
valves along its length	allow blood to flow easily														
muscular wall	maintain blood pressure														
large lumen	stop blood flowing backwards														
	b		<p>... needs lots of oxygen and ...</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>		[1]										
	c	i	<p><b>any two from:</b> diet / obesity; lack of exercise; genetic factors; stress; excessive alcohol; advanced age; high cholesterol;</p>		[2]										
		ii	<p>is an individual case (1) need lots of results ( to see pattern/trend) (1)</p>		[2]										
			<b>Total</b>		[7]										

Question		Expected Answers	Marks	Additional Guidance
6	a	3500 (1) molecules that could copy themselves (1) simple (1)	[3]	
	b	Variation is caused by ... <input type="checkbox"/> <input checked="" type="checkbox"/> (1) If conditions on Earth ... <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> The fossil record provides ... <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	[3]	
		<b>Total</b>	<b>[6]</b>	

Question		Expected Answers				Marks	Additional Guidance		
7		applies to							
		statement	nerves	hormones	both				
		... neurons	✓						
		... impulses	✓						
		... response	✓						
		communication			✓				
		... travel		✓					
		... long		✓					
		... slow		✓					
Total		[3]							

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