



GCSE

Biology A

General Certificate of Secondary Education

Unit **A222/01**: Modules B4, B5, B6 (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
not/reject	= answers which are not worthy of credit
ignore	= statements which are irrelevant - applies to neutral answers
allow/accept	= 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/owtte	= 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	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Question		Expected Answers				Marks	Additional Guidance
1	a		Kidneys reabsorb all ...	Kidneys reabsorb as much...	Kidneys do not reabsorb	[2]	Three rows correct = 2 marks Two rows correct = 1 mark One or zero rows correct = 0 marks
			Salt	✓			
			Sugar	✓			
			Water	✓			
	b	amount of salt in the blood	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(1)	[2]	One mark for each correct response More than two responses – delete 1 mark for each error Ignore crosses in rows 1, 4 and 5
		drinking fluids	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(1)		
			<input type="checkbox"/>				
			<input type="checkbox"/>				
		Total				[4]	

Question		Expected Answers					Marks	Additional Guidance
2	a	movement of <u>molecules/particles</u> (1) from a region of their high concentration to a region of their low concentration (1)					[2]	OWTTE
	b			moves into the cell	moves out of the cell	no overall movement	[1]	All three for 1 mark
				oxygen	✓			
				carbon dioxide		✓		
				dissolved food	✓			
	c	water dilute concentrated partially permeable					[2]	Responses must be in the correct order Four correct response = 2 marks Two or three correct responses = 1 mark One or zero correct responses = 0 marks
		Total					[5]	

Question			Expected Answers			Marks	Additional Guidance
3	a		homeostasis (1)			[1]	More than 1 response = 0 marks Accept any other indication of a correct response
	b					[2]	Left hand side correct = 1 mark Right hand side correct = 1 mark
	c	i	rate of reaction increases (1) molecules move faster (1) increased frequency (and energy) of collisions/ more collisions/ successful collisions/ energetic collisions (between molecules) (1)			[3]	OWTTE Accept bigger/more/larger Accept particles = molecules Accept correct ref. to kinetic energy Accept correct ref. to enzyme/substrate complexes Reject unqualified 'more energy'
		ii	sweating (1)			[1]	More than 1 response = 0 marks
			Total			[7]	

Question			Expected Answers	Marks	Additional Guidance
4	a		double; nucleus; cytoplasm	[2]	<p>Responses must be in the correct order.</p> <p>Three correct responses = 2 marks Two correct responses = 1 mark One or zero correct responses = 0 marks</p>
	b		<p>number of types of bases</p> <p>joined together</p>	[1]	More than one response = 0 marks
	c	i	separate/ divide (1) copy/ duplicate/ replicate (1)	[2]	<p>OWTTE Accept part/ open up = separate</p> <p>Accept correct references to mRNA production</p>
		ii	22 (1)	[1]	More than one response = 0 marks
			Total	[6]	

Question		Expected Answers	Marks	Additional Guidance
5	a	brain (1) spinal cord (1)	[2]	More than two responses – deduct 1 mark for each additional response.
	b	axon (1) cell membrane (1) increases (1)	[3]	Responses must be in the correct order.
	c	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">receptor</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">sensory neuron</div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">effector</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">spinal cord</div> </div>	[2]	Accept phonetic spellings Four correct responses = 2 marks Two or three correct responses = 1 mark One or zero correct responses = 0 marks
		Total		[7]
6	a	George (1) Charley (1)	[2]	More than two responses – deduct 1 mark for each additional response Accept any order of response Accept any other indication of a correct response
	b	meristem/ cambium (1)	[1]	Accept phonetic spelling
	c	any named correct tissue eg xylem/phloem (1) any named correct organ eg leaf/flower/stem/root (1)	[2]	
		Total	[5]	

Question		Expected Answers	Marks	Additional Guidance
7	a	electrical stimulation (1)	[1]	More than 1 response = 0 marks
	b	i ... storage and retrieval of information.	[1]	More than 1 response = 0 marks <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	ii	Any two from: <ul style="list-style-type: none">• intelligence;• language;• consciousness/thinking	[2]	OWTTE It must be a process. Accept any alternative correct credible answer eg sight, hearing, touch, smell, taste, learning, receive or respond to a stimulus, communicating, processing information. Reject memory, as memory/retrieval/storage is in stem of question. Reject reflexes, response (alone), reaction (alone), nerve impulses, effector, receptor, processing centre.
		Total	[4]	

Question		Expected Answers	Marks	Additional Guidance
8	a	simple (1)	[1]	More than 1 response = 0 marks
	b		[1]	
			<input type="checkbox"/>	
			<input type="checkbox"/>	
			<input type="checkbox"/>	
		...be more likely to transmit impulses...(1)	<input checked="" type="checkbox"/>	
	c	Mike (1) Hannah (1)	[2]	More than two responses – deduct 1 mark for each additional response.
		Total	[4]	

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