

Biology A

General Certificate of Secondary Education

Unit **A223/01**: Ideas in Context plus B7 (Foundation Tier)

Mark Scheme for January 2013

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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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Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	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	credit alternative wording / or words to that effect
ORA	or reverse argument

Available in scoris to annotate scripts:

Annotation	Meaning
	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response

Annotation	Meaning
	no benefit of doubt
	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

- Accept any clear, unambiguous response (including mis-spellings of scientific terms if they are *phonetically* correct, but always check the guidance column for exclusions).
- 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.

e.g. for a one-mark question where ticks in the third and fourth boxes are required for the mark:

*This would be worth
1 mark.*

*This would be worth
0 marks.*

*This would be worth
1 mark.*

c. 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, e.g. 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.

d. Marking method for tick-box questions:
 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 and other markings. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses. Credit should be given according to the instructions given in the guidance column for the question. 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.

e.g. if a question requires candidates to identify cities in England:

Edinburgh	<input type="checkbox"/>
Manchester	<input type="checkbox"/>
Paris	<input type="checkbox"/>
Southampton	<input type="checkbox"/>

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

- e. For answers marked by levels of response:
- i. **Read through the whole answer from start to finish**
 - ii. **Decide the level that best fits** the answer – match the quality of the answer to the closest level descriptor
 - iii. **To determine the mark within the level**, consider the following:

Descriptor	Award mark
A good match to the level descriptor	The higher mark in the level
Just matches the level descriptor	The lower mark in the level

- iv. Use the **L1, L2, L3** annotations in Scoris to show your decision; do not use ticks.

Quality of Written Communication skills assessed in 6-mark extended writing questions include:

- appropriate use of correct scientific terms
- spelling, punctuation and grammar
- developing a structured, persuasive argument
- selecting and using evidence to support an argument
- considering different sides of a debate in a balanced way
- logical sequencing.

Question		Answer	Marks	Guidance
1	(a)	any two from example of direct e.g. hunting; example if indirect e.g. destroying habitats / pollution;	2	accept disruption of food chain
	(b)	$\frac{56}{124} \times 100$; 45;	2	accept 45.16 or 45.2 45 = 2 marks
	(c)	<u>100</u> ;	1	
	(d)	any 2 from natural e.g. earthquake / volcano / tsunami; human activity e.g. pollution; climate change / global warming;	2	ignore new disease / predators accept habitat destruction once
	(e)	idea that extinction is worldwide / gone forever / all dead;	1	
	(f) (i)	any two from Idea of reducing numbers of species / less variety; Idea of reducing population size / fewer organisms; In a specific space; QWC for correct use of one scientific term;	3	 e.g. ecosystem / habitat e.g. species / population
	(ii)	Food / crops and medicines;	1	both needed for mark
Total			12	

Question			Answer	Marks	Guidance										
2	(a)	(i)	carbon dioxide; oxygen;	2	correct order accept correct symbols										
		(ii)	Sun / sunlight / light	1	do not accept heat										
	(b)	(i)	idea of slowing the rate of reaction / stops photosynthesis going faster	1											
		(ii)	installing lamps / give more light	1											
		(iii)	<table border="1"> <tbody> <tr> <td>increase the temperature</td> <td>✓</td> </tr> <tr> <td>increase the oxygen concentration</td> <td></td> </tr> <tr> <td>give the plants more glucose</td> <td></td> </tr> <tr> <td>increase the carbon dioxide concentration</td> <td>✓</td> </tr> <tr> <td>reduce the amount of water</td> <td></td> </tr> </tbody> </table>	increase the temperature	✓	increase the oxygen concentration		give the plants more glucose		increase the carbon dioxide concentration	✓	reduce the amount of water		2	
increase the temperature	✓														
increase the oxygen concentration															
give the plants more glucose															
increase the carbon dioxide concentration	✓														
reduce the amount of water															
Total				7											

Question			Answer	Marks	Guidance
3	(a)		<i>(autotroph)</i> rose / lettuce; <i>(heterotroph)</i> greenfly / ladybird / finch / caterpillar / owl / rat;	1	both needed in right order for one mark
	(b)		any 2 from autotrophs make own food; heterotrophs do not / ref to eating; autotrophs photosynthesise but heterotrophs do not;	2	ignore references to making energy
	(c)	(i)	idea of food / eating / feeding	1	accept consume for eat
		(ii)	any 2 from heat / respiration; (named) movement; sound; excretion / urine; egestion / faeces / defecation; uneaten parts;	2	ignore waste

Question		Answer	Marks	Guidance
	(d)	any 2 from idea of difficulty in counting / identifying individuals or species; ref to hibernation / seasons; individuals eating food not on the food web; idea of biomass inaccuracy; differences in size of data collection area;	2	accept a ref. to animals constantly moving
		Total	8	

Question		Answer	Marks	Guidance
4	(a)	chromosome; wall; membrane;	3	
	(b)	any 2 from single cell protein / Quorn / TVP / yogurt / enzymes / (named) antibiotic / alcohol / cheese / vinegar / insulin	1	two needed for one mark
	(c)	ethical; personal or religious belief / we should not do it / idea of morals / unnatural / wrong to do it / not based on data	2	first mark must be scored to award second mark
Total			6	

Question		Answer	Marks	Guidance
5	(a)	idea that parasite benefits; idea that host suffers harm;	2	benefit may be food / shelter
	(b)	animals can be parasites; parasites can / sometimes kill their hosts; parasites can live inside or outside their hosts;	3	
Total			5	

Question		Answer	Marks	Guidance
6	(a)	clot blood; carry oxygen; protect / fights against disease;	3	accept correct ref. to pathogen destruction ignore fight infection
	(b)	A; B;	2	
	(c)	clot/coagulate	1	
Total			6	

Question		Answer	Marks	Guidance
7		<p>One mark for each set of words used correctly</p> <p>Idea that DNA is the cause of the problem / makes someone the carrier of the disease or faulty gene;</p> <p>DNA / gene taken from white blood cells;</p> <p>gene probe attaches to (mutated) gene / DNA;</p> <p>use of autoradiography to locate gene probe;</p>	4	<p>accept separated into single strands</p> <p>ignore ref. to UV and fluorescence</p>
Total			4	

Question		Answer	Marks	Guidance
8	(a) (i)	breaths faster / deeper; heart beats faster;	2	either order
	(ii)	contract / shorten	1	ignore tighten accept correct ref. to ATP to ADP
	(b)	idea that it depends upon what Jasmine is doing ; idea of variation between individuals;	2	e.g. work harder / different activities or training e.g. age / gender / fitness level / genetic ignore diet / stress
	(c)	lactic acid; energy;	2	either order accept ATP
Total			7	
Paper Total			55	

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