



Biology A

General Certificate of Secondary Education A221/01

Unit 1: Modules B1, B2, B3

Mark Scheme for June 2010

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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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Any enquiries about publications should be addressed to:

OCR Publications PO Box 5050 Annesley NOTTINGHAM NG15 0DL

Telephone:0870 770 6622Facsimile:01223 552610E-mail:publications@ocr.org.uk

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, e.g. mis-spellings if phonetically correct (but check additional guidance).
- 4. Abbreviations, annotations and conventions used in the detailed mark scheme:

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

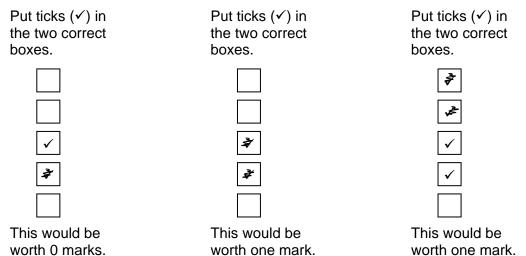
- E.g. mark scheme shows 'work done in lifting / (change in) gravitational potential energy' (1) work done = 0 marks work done lifting = 1 mark change in potential energy = 0 marks gravitational potential energy = 1 mark
- 5. Annotations:

The following annotations are available on SCORIS.

- ✓ = correct response
- × = incorrect response
- bod = benefit of the doubt
- nbod = benefit of the doubt <u>**not**</u> given
- ECF = error carried forward
- ^ = information omitted
- I = ignore
- R = reject
- 6. If a candidate alters his/her response, examiners should accept the alteration.
- 7. 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 boxes 3 and 4 are required for the mark:



8. 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.

9. 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, e.g. 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.

E.g. 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 <u>should be blank</u> (or have indication of choice crossed out).

Edinburgh			✓			✓	\checkmark	✓	✓	
Manchester	✓	×	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	×		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Qu	lesti	on	Expected Answers	Marks	Additional Guidance
1	а		nucleus (1)	[1]	accept phonetic spelling
					accept indication on diagram
	b		to store glucose from digestion to describe how to make proteins ✓ (1) to release energy by respiration to transport materials around the c	[1]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
	C		very long DNA molecules ✓ (1) very short DNA molecules □ very short chromosomes □ very long chromosomes □	[1]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
			Total	[3]	

Que	estio	Expected Answers		Additional Guidance
2	а	23 (1)	[1]	accept underline, tick, all four distractors crossed out
	b	both from her mother	[1]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
	C	one dominant allele. two dominant alleles. one recessive allele. two recessive alleles. two recessive alleles. one		if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
		Total	[3]	
2		discussion of privacy issue or right to know	u vo right [2]	responses must clearly indicate Amrit/employee or Dai/employer

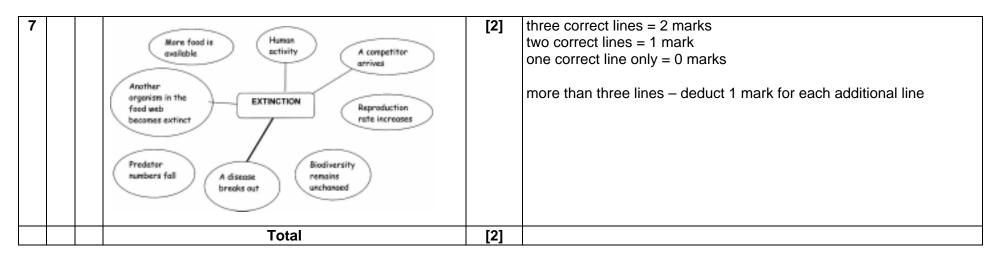
3	discussion of privacy issue eg right to know vs right not to tell (1)	[3]	responses must clearly indicate Amrit/employee or Raj/ employer
	any correct statement to Amrit (1)		
	any correct statement to Raj (1)		
	Total	[3]	

Question	Expected Answers	Marks	Additional Guidance
Question 4 a	Expected Answers using high frequency sound. engulfing them. drowning them. digesting them. making antibodies. using an electrical impulse. making antigens. using high speed collisions. injecting them with hormones.	Marks [2] ✓	Additional Guidance 3 correct responses = 2 marks 2 or 1 correct responses = 1 mark if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc

Qı	Question		Expected Answers	Marks	Additional Guidance
4	b	on	Expected Answers presence of nitrogen gas acidic cold wet presence of food dry warm vesence of carbon dioxide	[3]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
	C		any three from: saliva – enzymes/chemicals; sweat - acidic / chemicals; tears - enzymes / chemicals; <u>stomach</u> – acid; mucous/wax – traps microorganisms;	[3]	name of barrier must be linked to correct method of operating allow 'clots and scabs covering wounds' ignore non-biological names ignore gut
			Total	[8]	

Qu	Jesti	on	Expected Answers	Marks	Additional Guidance
5	а		smoke cigarettes exercise regularly (1)	[2]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
			drink a lot of alcoholhave a poor dietreduce his stress level✓(1)		
	b		artery; decrease; oxygen; heart;	[2]	all four correct = 2 marks two or three correct = 1 mark one correct = 0 marks accept clear deletion of incorrect alternative
	С		high risklow riskCABD	[2]	four correct = 2 marks three or two correct = 1 mark ignore same letter in both boxes the letters must be clear
			Total	[6]	

Qu	Question		Expected Answers		Additional Guidance	
6 a			Peter (1)	[1]		
	b		Ranjit (1)	[1]		
	С		Stella (1)	[1]		
	d		Jane and Ranjit (1)	[1]	either way round	
			Total	[4]		



Que	stion	Expected Answers	Marks	Additional Guidance
8	a	Dead Sea Scrolls stories the fossil record ✓ on other planets in DNA ✓ internet	[2]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
	b	could; natural;	[1]	two correct = 1 mark accept clear deletion of incorrect alternative
	C	some species find it hard to survive / become extinct (1) new adaptations become favourable (1)		one mark is for differential survival / or clear named example a second mark for some being better adapted
	Total		[5]	

Qu	Question		Expected Answers					Additional Guidance
9	а		years ago 30 000 200 000 2 000 000 2 800 000 7 000 000		Asia		Marks [1]	shading may be extended into the 'L' shape then give mark shaded area must not extend significantly beyond the L shape shading must not go into central area
	b	i	All comn Only one <i>Australopithect</i> None co <i>Homo erectu</i> s	. common a us mmon ance	ancestor.	 ✓ (1) □ <	[1]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc

Question		on	Expected Answers	Marks	Additional Guidance
9	b	ii	central evolution. convergent evolution. divergent evolution. ✓ (1) negative evolution.	[1]	if no ticks, allow any other indication of correct response eg underlining, cross, shaded, smiley face etc
		iii	Homo sapiens (1)	[1]	accept humans
	С		any two from: idea that brain got bigger / larger / complex / developed; (better chance of) survival / breeding / pass on genes; idea of intelligence eg brighter / smarter; example of intelligence e.g. using tools / speech / talking / writing / fire ;	[2]	ignore live longer ignore learning / knowledge / thinking / self aware / memory ignore communication / building / hunting / farming / use of hands/ bipedal
	d		any two from: idea that not enough evidence / data / results; idea of conflicting data/evidence/results / two different explanations or interpretations; loss of sponsorship etc;	[2]	 ignore reference to God ignore arguments about loss of face; ignore reference to "thinking you are right" ignore no evidence ignore reference to different experiments. do not credit specific reference to Darwin or theories of evolution
			Total	[8]	

OCR (Oxford Cambridge and RSA Examinations) 1 Hills Road Cambridge CB1 2EU

OCR Customer Contact Centre

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Telephone: 01223 553998 Facsimile: 01223 552627 Email: general.qualifications@ocr.org.uk

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