

GCSE

Biology A

Unit **A163/01**: Module B7 (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2017

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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
words	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	alternative wording
ORA	or reverse argument

Available in RM Assessor to annotate scripts

	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
	no benefit of doubt

	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

If a candidate alters his/her response, examiners should accept the alteration.

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:

Put ticks (✓) in the two correct boxes.

✗
✗

This would be worth 1 mark.

Put ticks (✓) in the two correct boxes.

✓
✗

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

✗
✗
✓
✓

This would be worth 1 mark.

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.

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 should be blank (or have indication of choice crossed out).

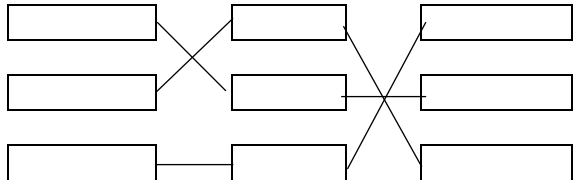
Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Question			Answer	Marks	Guidance																		
1	a	i	3	1																			
		ii	60	1	accept 57 - 63																		
		iii	A (no mark) <i>any two from:</i> slowest/slower rise in heart rate; (1) smallest/smaller rise in heart rate; (1) quickest/quicker return to resting heart rate; (1) lowest heart rate (during exercise)/lowest resting heart rate; (1)	2	All answers must give idea of comparison must be rise must be rise accept fastest recovery time																		
	b		<table border="1"> <thead> <tr> <th>Question</th> <th>Medical history</th> <th>Lifestyle history</th> </tr> </thead> <tbody> <tr> <td>Are you currently taking any medication</td> <td>✓</td> <td></td> </tr> <tr> <td>How much alcohol do you drink each week?</td> <td></td> <td>✓</td> </tr> <tr> <td>Do you smoke?</td> <td></td> <td>✓</td> </tr> <tr> <td>How far do you run each week?</td> <td></td> <td>✓</td> </tr> <tr> <td>Has anyone in your family had heart disease?</td> <td>✓</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">(1) (1)</p>	Question	Medical history	Lifestyle history	Are you currently taking any medication	✓		How much alcohol do you drink each week?		✓	Do you smoke?		✓	How far do you run each week?		✓	Has anyone in your family had heart disease?	✓		2	mark each column independently
Question	Medical history	Lifestyle history																					
Are you currently taking any medication	✓																						
How much alcohol do you drink each week?		✓																					
Do you smoke?		✓																					
How far do you run each week?		✓																					
Has anyone in your family had heart disease?	✓																						

	c	i	Mean (28+40+34+38)/4 ; (1) 35; (1)	2	correct mean = 2 marks accept correct answer in table
		ii	Range 28 to 40; (1)	1	accept correct answer in table accept answer of 12 as calculated range
		iii	Increased (heart rate); (1) (Heart rate) less variable owtte (1)	2	accept More even/more regular/smaller range but needs idea of comparison
		iv	Infection/pain/rejection; (1)	1	accept risk damage to heart / blood clot / air leak ignore death / risk of heart attack
		v	<i>any two from:</i> resistant to wear and tear/strong/long lasting/will not corrode/will not be rejected/don't make a noise/doesn't damage the blood or heart/allow smooth flow.	2	ignore does not rust
			Total	14	

Question		Answer	Marks	Guidance		
2	a	(output) rabbit faeces/urea/excretions/dead animal/leaves/plants/organic matter (1); (input) nitrogen(compounds)(from waste) taken up/absorbed by plant (roots) (1);	2	accept decomposed material accept plants take up nitrates as additional mark point (1) ignore references about 'used to grow'		
	b	bacteria in the soil ... <input type="checkbox"/> nitrogen compounds ... <input checked="" type="checkbox"/> nitrogen in the <input type="checkbox"/> the crop plant ... <input checked="" type="checkbox"/> the rabbits ... <input checked="" type="checkbox"/> there may be no ... <input type="checkbox"/>	3	one mark for each correct tick		
	c	i		foliage/leaves protect soil from rainfall (1); (idea of) roots hold soil together (1);	2	accept more rain makes contact with soil

		ii	fewer clouds ... <input checked="" type="checkbox"/>		2	One mark for each correct tick
			no new vegetation will ... <input type="checkbox"/>			
			species diversity <input type="checkbox"/>			
			there will be <input type="checkbox"/>			
			where timber is .. <input checked="" type="checkbox"/>			
				Total	9	

Question			Answer	Marks	Guidance
3	a	i	muscle drawn to left of humerus and labelled; (1)	1	accept label as muscle/antagonistic muscle/triceps
		ii	tendons clearly attached from muscle to bone; (1)	1	accept any attached and correctly labelled tendon
	b		(muscles can only move joints) by contraction; (1) Muscles work as an antagonistic pair ; (1) Idea that one muscle bends joint and second straightens joint;(1)	2	accept getting shorter/muscle pulls the bone ignore muscle tenses one muscle contracts and the other muscle relaxes (2)
	c		<i>any two from</i> pain (1); swelling (1); inflammation (1);	2	
	d			3	one mark each for cartilage correct function and job (1); ligament correct function and job (1); tendon correct function and property (1);
			Total	9	

Question	Answer	Marks	Guidance
4	<p><i>Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.</i></p> <p>Level 3 (5–6 marks)</p> <p>Writes about most components of the blood and relates this to the molecules that they transport.</p> <p><i>Quality of written communication does not impede communication of the science at this level.</i></p> <p>Level 2 (3–4 marks)</p> <p>Writes about some components of the blood AND refers to some molecules transported by the blood.</p> <p><i>Quality of written communication partly impedes communication of the science at this level.</i></p> <p>Level 1 (1–2 marks)</p> <p>Writes about components of the blood OR molecules that are transported by the blood.</p> <p><i>Quality of written communication impedes communication of the science at this level.</i></p> <p>0 marks</p> <p>No response or no response worthy of credit.</p>	4	<p>This question is targeted at grades up to C</p> <p>Indicative scientific points may include</p> <p>Blood components</p> <p>Red Blood Cells White Blood Cells Platelets Plasma</p> <p>Molecules carried</p> <p>Oxygen/haemoglobin (by red blood cells) Carbon dioxide (by plasma/rbc) Glucose/amino acids (plasma) Hormones (plasma) Urea (plasma) Antibodies (plasma) Water (plasma)</p>
	Total	6	

Question		Answer	Marks	Guidance
5	a	rise quickly (1); higher (1); fall below normal(1);	3	one mark for each correct answer
	b	supports – the two highest GI are processed (crisps and doughnuts) / doughnuts/crisps are processed (1); contradicts – onions/beetroot also have a high GI and they are not processed foods (1);	2	
		Total	5	

Question	Answer	Marks	Guidance
6	<p><i>Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.</i></p> <p>Level 3 (5–6 marks) Describes cause AND treatment for BOTH type 1 and 2 diabetes <i>Quality of written communication does not impede communication of the science at this level.</i></p> <p>Level 2 (3–4 marks) Describes cause AND treatment for EITHER type 1 or 2 diabetes <i>Quality of written communication partly impedes communication of the science at this level.</i></p> <p>Level 1 (1–2 marks) Describes cause OR treatment for EITHER type 1 or 2 diabetes <i>Quality of written communication impedes communication of the science at this level.</i></p> <p>0 marks No response or no response worthy of credit.</p>	6	<p>This question is targeted at grades up to E</p> <p>Type 1 (Cause) Asha identified as type 1 (pancreas) stops producing insulin Blood sugar level rise dangerously high Genetic cause Normally occurs at young age/born with it</p> <p>(Treatment) Controlled by injection of insulin Monitor blood sugar levels</p> <p>Type 2 (Cause) Grandfather identified as type 2 Late onset poor diet/obesity/lack of exercise Body no longer responds to insulin / doesn't make enough insulin</p> <p>(Treatment) Controlled by diet / exercise Diet high in fibre / complex carbohydrates help maintain blood sugar level. Medication / named drug</p>
Total		6	

Question		Answer	Marks	Guidance				
7	a	evaporation	1					
	b	<table border="1"><tr><td>C</td><td></td><td>D</td><td>B</td></tr></table>	C		D	B	2	3 correct = 2 marks 1 or 2 correct = 1 mark
C		D	B					
		Total	3					

Question	Answer	Marks	Guidance
8	<p><i>Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.</i></p> <p>Level 3 (5–6 marks) Identifies cells used AND gives a good description of their use in treating leukaemia AND spinal injury <i>Quality of written communication does not impede communication of the science at this level.</i></p> <p>Level 2 (3–4 marks) Identifies cells used AND gives a basic description their use in treating leukaemia OR spinal injury <i>Quality of written communication partly impedes communication of the science at this level.</i></p> <p>Level 1 (1–2 marks) Identifies cells used stem cells OR basic description of their use in treating leukaemia OR spinal injury <i>Quality of written communication impedes communication of the science at this level.</i></p> <p>0 marks No response or no response worthy of credit.</p>	6	<p>This question is targeted at grades up to E</p> <p>Indicative scientific points may include</p> <p>Stem cells Cells used are (adult) stem cells Undifferentiated cells/unspecialised cells Can grow into any type of cell</p> <p>Leukaemia Description leukaemia / Type of cancer Cells taken from bone marrow (Grown in the lab) by tissue culture Inject into patient Grows into new white blood cells Replaces cancerous white cells Low risk of rejection / tissue match</p> <p>Spinal injury Description spinal injury (Grown in the lab) by tissue culture Grow into new nerve cells Reconnect damaged spinal cells Allows impulses to reach legs Low risk of rejection / tissue match</p>
	Total	6	

Question		Answer	Marks	Guidance
9	a	<p><i>any two from:</i></p> <p>show plastic package has broken/not air tight; (1)</p> <p>oxygen will get in; (1)</p> <p>(which will allow the) growth/entry of bacteria/microorganisms; (1)</p> <p>Idea that the quality of the food is decreases/food not to be eaten/unsafe to eat; (1)</p>	2	<p>ignore ref to use by/best before/past the sell by date/not fresh</p> <p>ignore oxygen increases</p> <p>ignore food will be contaminated without clarification</p> <p>accept may cause food poisoning</p>
		Total	2	

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