



GCSE

Biology A

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

General Certificate of Secondary Education

Mark Scheme for June 2016

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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.

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A163/01

MarkScheme










June 2016

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

A163/01

MarkScheme

June 2016

	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.

A163/01

MarkScheme

June 2016

- 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 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

A163/01

MarkScheme

June 2016

MARK SCHEME:

Question		CBT Question Numbers	Answer	Mark	Guidance										
1	a		<table border="1"> <tr><td>digestion</td><td></td></tr> <tr><td>nerve transmission</td><td></td></tr> <tr><td>support the body</td><td>✓</td></tr> <tr><td>control of body temperature</td><td></td></tr> <tr><td>movement</td><td>✓</td></tr> </table>	digestion		nerve transmission		support the body	✓	control of body temperature		movement	✓	2	
digestion															
nerve transmission															
support the body	✓														
control of body temperature															
movement	✓														
	b		<table border="1"> <tr> <td>cartilage</td> <td>transmits forces between muscle and bone</td> <td>elastic</td> </tr> <tr> <td>tendon</td> <td>holds joints together</td> <td>tough</td> </tr> <tr> <td>ligament</td> <td>reduces friction</td> <td>smooth</td> </tr> </table>	cartilage	transmits forces between muscle and bone	elastic	tendon	holds joints together	tough	ligament	reduces friction	smooth	3	1 mark for each correct row	
cartilage	transmits forces between muscle and bone	elastic													
tendon	holds joints together	tough													
ligament	reduces friction	smooth													
	c		Sprain; Dislocation Torn or damaged ligament / tendon;	2	3 correct = 2 2 correct = 1 ignore any references to bone / fractures										
	d		Assessment / advice / instructions; Exercises; Idea of cure (e.g. strengthen muscles) / improvement / recovery;	3	ignore physiotherapy accept massage										
			Total	10											

A163/01

MarkScheme

June 2016

Question	CBT Question Numbers	Answer	Mark	Guidance
2	✓	<p>[Level 3] Includes some indicative points from all three areas. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p>[Level 2] Includes some indicative points from two areas. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p>[Level 1] Includes some indicative points from one area. Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p>This question is targeted at grades up to C</p> <p>Indicative scientific points referring to the tables may include:</p> <ul style="list-style-type: none"> • BMI = 90 / 2.89 • = 31 • Needs to be 24 or below • Refers to 29% fat <p>Indicative scientific points concerning conclusions</p> <ul style="list-style-type: none"> • Neil is obese on BMI scale • Neil is above average on fat scale • Idea that BMI is not completely reliable <p>Indicative scientific points for action may include:</p> <ul style="list-style-type: none"> • Yes he should be concerned. • He should lose weight • Do more exercise • Improved diet <p>Use the L1, L2, L3 annotations in RM Assessor; do not use ticks.</p>
		Total	6	

A163/01

MarkScheme

June 2016

Question		CBT Question Numbers	Answer	Mark	Guidance
3	a		<p>[Level 3] Answer includes some indicative scientific points concerning BOTH group 1 and group 2 AND refers to difficulties regarding overlap of groups. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p>[Level 2] Answer includes some indicative scientific points concerning BOTH group 1 and group 2. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p>[Level 1] Answer includes some correct indicative points concerning group 1 OR group 2. Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p>This question is targeted at grades up to C References to indicative scientific points concerning group 1 may include:</p> <ul style="list-style-type: none"> • Some men have a very healthy aorta • Some have an aneurism that may require surgery. • Reasons for not giving surgery could include ideas of benefits do not outweigh the risk of surgery. • Range in group 1 is 1.0 – 6.5cm <p>References to indicative scientific points concerning group 2 may include</p> <ul style="list-style-type: none"> • All men in group have an aneurism • Surgery starts at about 4.5cm • Range in group 2 is 4.5 – 8.5cm <p>References to indicative scientific points concerning overlap of both groups may include:</p> <ul style="list-style-type: none"> • Idea of some men have surgery between 4.5cm and 6.5cm (group 2) others do not (group 1). • All men 6.5cm and above have surgery • Idea that they may have different risk factors e.g. BMI / smokers etc. <p>Use the L1, L2, L3 annotations in RM Assessor; do not use ticks.</p>

A163/01

MarkScheme

June 2016

Question			CBT Question Numbers	Answer	Mark	Guidance
3	b	i		Pacemaker; Heart valve; Organ printing;	2	any 2 from 3 ignore bypass / transplant
		ii		<i>Any three from:</i> Death; Bleeding; Pain; Infection; Rejection; Reaction to anaesthetic; Mistake by doctor;	3	accept any good alternative ignore failure of surgery / it may not work
		iii		<i>Any two from:</i> Only do op if necessary; Anti-rejection drugs; Check for allergic reaction; Well trained doctors;	2	
				Total	13	

A163/01

MarkScheme

June 2016

Question			CBT Question Numbers	Answer	Mark	Guidance
4	a	i	✓	Less than / before 30; (age) when stopped smoking;	2	Do not accept 30 (and under)
		ii	✓	11 – 5.6; 5.4;	2	5.4 alone = 2 marks
		iii	✓	<i>Any two from:</i> The younger you are when you stop the lower the risk / the older you are when you stop the higher the risk; Even if never smoked still have a risk / low(est) risk; Rate of increase of risk increases with age / doubles every ten years;	2	accept positive correlation between age and risk for 1 mark
		iv	✓	(As) how long they have smoked....; increases, risk increases;;	2	accept idea that it is uncertain how long they have been smoking. Trend must be identified for 2 nd mark e.g. Longer you smoke the bigger the risk ORA = 2 marks
	b		✓	Food / intake idea eg Poor diet explained eg fat clogs arteries; Exercise idea eg Lack of exercise explained eg unfit ORA;	2	accept recreational / illegal drugs and alcohol for Food idea accept any good explanation e.g. fat clogs arteries / salt raises blood pressure
				Total		

A163/01

MarkScheme

June 2016

Question		CBT Question Numbers	Answer	Mark	Guidance
5	a		Never runs out;	1	ignore reusable accept always there
			Idea qualified eg can't use it up like coal; External source of energy;	1	
	b		Goes open loop; Has an effect on food web / other organisms;	2	
	c		Farmers – more meat; Rest of world – less resources / O ₂ ;	2	Examples could include native people, indigenous groups with a loss of habitat / homes / resources Scientists, medicines/cures from plants
			Total	6	

A163/01

MarkScheme

June 2016

Question		CBT Question Numbers	Answer	Mark	Guidance
6	a		Increase; Decrease / Reduce;	2	accept cools down
	b		<i>Any two from:</i> Dehydration; Reduced sweating; Increase in body temp / hyperthermia;	2	
	c		<pre> graph LR A[temperature detector in skin] --- D[receptor] B[brain] --- C[processing centre] E[sweat gland] --- F[effector] </pre>	2	3 lines correct = 2 1 or 2 lines correct = 1
			Total	6	

Question		CBT Question Numbers	Answer	Mark	Guidance
7	a	i	Enzymes;	1	
		ii	(Uses) Chymosin; Idea of not from animal ;	2	accept does not use rennet / enzyme from animals do not accept ideas about milk not coming from animals
	b		<p>[Level 3] Some details of industrial process. AND Some details of features. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p>[Level 2] Some details of industrial process. OR Some details of features. OR One detail of both. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p>[Level 1] One detail of industrial process or one detail of features. OR One detail of the use of data Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit.</p>		<p>This question is targeted at grades up to E</p> <p>Indicative scientific points regarding industrial process may include:</p> <ul style="list-style-type: none"> • fermentation • does not take up much space • make a lot • controlled conditions • no ethical concerns • named products eg antibiotics / single cell protein <p>Indicative scientific points regarding features of bacteria may include:</p> <ul style="list-style-type: none"> • can be genetically modified • idea of how genetically modified • presence of plasmids • rapid reproduction / doubles • simple biochemistry • can make complex molecules <p>Indicative scientific points regarding use of data may include:</p> <ul style="list-style-type: none"> • correct reference to time and number of bacteria

A163/01

MarkScheme

June 2016

Question			CBT Question Numbers	Answer	Mark	Guidance
				(0 marks)		Use the L1, L2, L3 annotations in RM Assessor; do not use ticks.
				Total	9	
				Paper Total	60	

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