

Question	Marking details	Marks Available
7/1 (a)	<p><u>growth</u> (response) shown by <u>plants</u>;</p> <p>to a {<u>one sided/unilateral</u>} stimulus;</p> <p>Accept example of growth of plant towards {light <u>source</u>/ <u>pull of</u> gravity/ <u>source</u> of gravity} / sun;</p>	1 1 1
(b)	<p>(i) shoot drawn growing up from the horizontal;</p> <p>root shown growing down from the horizontal;</p> <p>Must show at least slight curvature in the correct direction</p> <p>Shoot should have leaves/ root should have an end</p>	2
	<p>(ii) I <u>positive</u> gravitropism/ geotropism;</p> <p>Accept negative gravitropism/ geotropism if relates to drawing</p> <p>Reject negative phototropism</p> <p>II <u>positive</u> phototropism;</p> <p>(Accept: negative gravitropism/ geotropism)</p> <p>ANSWERS MUST RELATE TO THEIR DRAWING</p>	2
<b>Question 7 Total</b>		<b>[6]</b>

Question	Marking details	Marks Available
8/2 (a)	<p>Any 2 from:</p> <p>the <u>more</u> overweight the greater the chance (of early death);</p> <p>the <u>more</u> overweight a person is initially the greater the chance (of <u>early</u> death) after losing weight;</p> <p>losing weight decreases the chance (of early death);</p> <p>Reject greater chance of death (not qualified by 'early')</p>	2

(b) (i)	<table border="1"> <thead> <tr> <th>John's lunch</th> <th>kJ</th> </tr> </thead> <tbody> <tr> <td>large portion of chips (300g)</td> <td>3195</td> </tr> <tr> <td>4 slices of bread and butter</td> <td>2080</td> </tr> <tr> <td>large fried fish 250g</td> <td>1375</td> </tr> <tr> <td>2 cups of black coffee with 4 teaspoons of sugar per cup</td> <td>1360</td> </tr> <tr> <td>200g portion of apple pie</td> <td>2400</td> </tr> <tr> <td>50 g portion of custard</td> <td>250</td> </tr> <tr> <td>Total energy content of John's lunch</td> <td>10,660</td> </tr> </tbody> </table>	John's lunch	kJ	large portion of chips (300g)	3195	4 slices of bread and butter	2080	large fried fish 250g	1375	2 cups of black coffee with 4 teaspoons of sugar per cup	1360	200g portion of apple pie	2400	50 g portion of custard	250	Total energy content of John's lunch	10,660	2
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Foods = 1 mark;

Total = 1 mark; (ecf)

Question	Marking details	Marks Available
	(ii) 160 (kJ); Allow ECF from (b)(i) as long as candidate's answer is greater than 10 500	1
	(iii) 19%	1
	<b>Question 8/2 Total</b>	<b>[6]</b>

Question	Marking details	Marks Available
9/3 (a)	A <u>erector</u> muscle;	2
	B <u>sweat</u> pore;	
(b)	Any two of the following. 1 mark for response 1 mark for explanation(2x2)	4
Response	hairs flattened; NOT hairs relax/ lie down	
Explanation	{thin layer of / insulating layer of/ less} air trapped so more heat {can escape/ be lost}; NOT no air trapped	
Response	sweat (present)/ sweating/ sweat produced;	
Explanation	<u>heat</u> lost by <u>evaporation</u> / <u>heat</u> {removed from the body/ used} to <u>evaporate</u> sweat;	
Response	vasodilation/blood vessels <u>wider</u> ; NOT larger/ increase in size/ grow/ expand/ bigger	
Explanation	<u>more</u> blood near skin surface <u>more</u> heat lost; NOT blood gets nearer to skin surface	

**Question 9/3 Total**

Question	Marking details	Marks Available
10/ 4	<p><b>Indicative content</b></p> <p>Carbon dioxide taken up by plants for photosynthesis. Carbon used in manufacture of carbohydrates/ sugar/ starch/ protein/ fat. Plants eaten by animals. Plants and / or animals respire and return carbon (dioxide) to air. Plants and/ or animals die. Decay/ named organisms release carbon (dioxide) to air. Reference to fossilisation due to lack of decay. Combustion/ burning of fossil fuels releases carbon (dioxide).</p> <p><b>5-6 marks</b> The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p><b>3-4 marks</b> The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p><b>1-2 marks</b> The candidate makes some relevant points, such as those in the Indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p><b>0 marks</b> The candidate does not make any attempt or give a relevant answer worthy of credit</p> <p><b>Question 10/4 Total</b></p>	6
		<b>[6]</b>

Question	Marking details	Marks Available
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5 (a) (i) B- 6 black and 2 white;

(ii) Allow ECF from (a) (i)

Gametes correct; Must be B

1

Must link to answer to a(i)

1

Cross correct;

Gametes	B	b
B	BB	Bb
b	Bb	bb

(b) (i) I XY both correct 1 mark

1

II XX;

Gametes correct; (ECF)

Cross correct;

1

1

Gametes	X	Y
X	XX	XY
X	XX	XY

**Question 5 Total**

**[6]**

Question	Marking details	Marks Available
6	(a) (i) DNA;	1
	(ii) Genes/ alleles;	1
	(b) (i) E;	1
	(ii) E and/ or D;	1
	(iii) A;	1
	(iv) B and C;	1
	<b>Question 6 total</b>	<b>[6]</b>

Question	Marking details	Marks Available
7 (a)	Bacteria/ microorganisms/ microbes/ decomposers use oxygen; NOT (de)nitrifying bacteria for respiration;	2
(b)	Any 4 from Bacteria/ microorganisms/ microbes/ decomposers; Change {protein/urea} to ammonia (compounds); Increase <u>and</u> then a decrease in ammonia; (decrease is) due to dilution; (Some) ammonia is changed to nitrates;	4
<b>Question 7 total</b>		<b>[6]</b>

Question	Marking details	Marks Available
8 (a)	$\frac{44\ 000}{4\ 600\ 000} \times 100$ (working shown); 4 600 000 Answer = 1% ; correct answer = 2 marks	2
(b)	Any two from Energy used by organisms for cell {repair/ maintenance}; growth; movement; reproduction; Energy transferred to environment (lost) during respiration (as heat); excretion; Accept correctly named waste	2
<b>Question 8 total</b>		<b>[4]</b>

Question	Marking details	Marks Available												
9 (a)	Negative feedback; NOT homeostasis	1												
(b)	(i) Insulin;	1												
	(ii) Glucagon; correct spelling	1												
(c)	Liver;	1												
(d)	(i) Use Benedicts; <u>Boil/ heat at 80°C or above/ heat strongly;</u> NOT heat unqualified/ warm/ hot <b>OR</b> Use clinistix/ urinalysis strips/ uristix/ multistix ; Dip (clinistix) into sample;	2												
(ii)	<table border="1"> <thead> <tr> <th>Reagent</th> <th>Present</th> <th>Absent</th> </tr> </thead> <tbody> <tr> <td>Benedicts</td> <td>brown/ orange/ reddish brown/ brick red/ brownish red/ green; NOT red unqualified/ yellow</td> <td>blue/ light blue/ clear blue; NOT dark blue/ purple</td> </tr> <tr> <td>Clinistix/ multistix</td> <td>Dark blue/ purple/ dark purple;</td> <td>pink/ red;</td> </tr> <tr> <td>Uristix</td> <td>Brown;</td> <td>Green;</td> </tr> </tbody> </table>	Reagent	Present	Absent	Benedicts	brown/ orange/ reddish brown/ brick red/ brownish red/ green; NOT red unqualified/ yellow	blue/ light blue/ clear blue; NOT dark blue/ purple	Clinistix/ multistix	Dark blue/ purple/ dark purple;	pink/ red;	Uristix	Brown;	Green;	2
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<b>Question 9 total</b>		<b>[8]</b>												

Question	Marking details	Marks Available
10	<p><b>Indicative content</b></p> <p>A mutation in one or more genes caused variation in the rat population. One variety became resistant to poison. This was an advantage to the resistant individuals and due to natural selection/ survival of the fittest to breed, allowed the resistant gene to be passed on to the offspring of the surviving rats. Success in Henderson Island will depend on the smaller population (small island) and killing all the rats initially.</p> <p><b>5-6 marks</b></p> <p>The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p><b>3-4 marks</b></p> <p>The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p><b>1-2 marks</b></p> <p>The candidate makes some relevant points, such as those in the Indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p><b>0 marks</b></p> <p>The candidate does not make any attempt or give a relevant answer worthy of credit</p>	<b>[6]</b>
	<b>Question 10 Total</b>	