

# Mark Scheme (Results)

November 2011

GCSE Biology  
5BI1F/01

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Question Number	Answer	Acceptable answers	Mark
<b>1(a)(i)</b>	increase (in world population)	<b>Ignore</b> bald numbers	<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(a)(ii)</b>	(2000) 6.0 (1980) 4.5 (1)  = 1.5 (billion)	Range of 5.9 to 6.1 (for 2000) Range of 4.4 to 4.6 (for 1980)  Give full marks for correct answer of 1.5 (billion).  If any other answer is provided, within above ranges, it must have calculation shown e.g. 1.7 (billion)	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(a)(iii)</b>	C		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(b)(i)</b>	$(0.036 + 0.031 + 0.032) = 0.099$ (1)  $\frac{0.099}{3} = 0.033(\%)$	Give full marks for correct answer with no working	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(b)(ii)</b>	An explanation linking <b>two</b> of the following points: <ul style="list-style-type: none"> <li>• fewer trees in area B (than in area A ) (1)</li> <li>• less photosynthesis occurring in area B (than in area A) (1)</li> <li>• less CO<sub>2</sub> removed from atmosphere in area B (than in area A) (1)</li> </ul>	<b>Ignore</b> no trees	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>2(a)</b>	A		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>2(b)</b>	<ul style="list-style-type: none"> <li>• genus (1)</li> <li>• species (1)</li> </ul>		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>2(c)</b>	<p>An explanation including the following points:</p> <ul style="list-style-type: none"> <li>• the Cave Bear has a backbone (1)</li> <li>• this is characteristic of vertebrates (1)</li> </ul>	<p>Accept vertebrae / spine / supporting rod for backbone  <b>Ignore</b> spinal cord</p> <p>Accept member of chordata</p>	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>2(d)</b>	<p>An explanation including the following points:</p> <ul style="list-style-type: none"> <li>• competition for resources (such as food / shelter) / other organisms were better at competing for resources (1)</li> <li>• increased number of predators(1)</li> <li>• if there was environmental change the species may not have been able to adapt (1)</li> </ul>	<p>Accept humans used caves eq</p> <p>Accept humans as predator/hunter</p> <p>Accept humans changing the environment and other species unable to adapt</p>	<b>(3)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(a)(i)</b>	A		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(a)(ii)</b>	<p>A comparative statement linking the following points:</p> <ul style="list-style-type: none"> <li>the root of seedlings A and B changed direction in order to grow downwards / towards gravity(1)</li> <li>the root of seedling C continued to grow downwards (1)</li> </ul>		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(a)(iii)</b>	<p>An explanation linking three of the following points:</p> <ul style="list-style-type: none"> <li>root A began to grow downwards in response to gravity (1)</li> <li>this is <b>positive</b> gravitropism / geotropism (1)</li> <li>due to the effect of <b>auxin</b> (1)</li> <li>auxin / hormone inhibits growth on underside of the root / stimulates growth on upper surface of root / one side of root (and therefore bends downwards) (1)</li> <li>by the cells on the upper surface elongating (1)</li> </ul>	<p>Accept gravitropism/geotropism for downwards in response to gravity</p> <p><b>Ignore</b> references to light / phototropism</p>	<b>(3)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(b)(i)</b>	<ul style="list-style-type: none"> <li>pyramid shaped (1)</li> <li>accurate proportion (1)</li> </ul>		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(b)(ii)</b>	<p>An explanation linking two of the following points:</p> <ul style="list-style-type: none"> <li>not all of the plant material / mouse is eaten by the mouse / snake (1)</li> <li>mouse respire / movement eq (1)</li> <li>mouse excrete / some plant material not digested (1)</li> </ul>		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>4(a)(i)</b>	D		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>4(a)(ii)</b>	heterozygous	Accept recognisable spelling	<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>4(b)</b>	<ul style="list-style-type: none"> <li>• chromosomes (1)</li> <li>• nucleus (1)</li> </ul>		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark									
<b>4(c)(i)</b>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>B</td> <td>b</td> </tr> <tr> <td>B</td> <td>BB</td> <td>Bb</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> </table> <p>correct father gametes (1)</p> <p>correctly completed Punnett square (1)</p>		B	b	B	BB	Bb	b	Bb	bb	Accept male gametes are reversed e.g. bB	<b>(2)</b>
	B	b										
B	BB	Bb										
b	Bb	bb										

Question Number	Answer	Acceptable answers	Mark
<b>4(c)(ii)</b>	50%	Accept "fifty per cent" Do not accept ratios/fractions	<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
4(d)	<p>A description including <b>three</b> of the following points:</p> <ul style="list-style-type: none"> <li>• cystic fibrosis causes thick / sticky mucus (in the digestive system and the lungs) (1)</li> <li>• this can coat the lining of the lungs (and reduce oxygen absorption across the lungs)(1)</li> <li>• because the surface area of the lungs are reduced (1)</li> <li>• (the mucus can reduce food absorption) by blocking the pancreas (where enzymes are produced) (1)</li> <li>• the enzymes cannot then break down the foods to be absorbed (1)</li> </ul>	<p>mucus builds up</p> <p>clog the lungs <b>Ignore</b> references to throat</p> <p>damage to intestine</p> <p>Accept other correct description of CF problem related to absorption of food and oxygen</p>	<b>(3)</b>



Question Number	Answer	Acceptable answers	Mark
<b>5a(i)</b>	decreased reaction time / reaction time became quicker / increased speed of reaction (1)		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>5a(ii)</b>	An explanation linking the following points: <ul style="list-style-type: none"> <li>• caffeine (is a drug that) acts as a stimulant (1)</li> <li>• speeds up (nerve) impulses (across synapse) (1)</li> </ul>	Accept messages, signals Neurotransmitters 'move' faster	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>5a(iii)</b>	An explanation linking the following points: <ul style="list-style-type: none"> <li>• water acted as a control experiment (1)</li> <li>• to see if the stimulant was in the cola (1)</li> </ul>	Accept for comparison / to show difference between  Accept water does not have caffeine <b>Ignore</b> it has no sugar / water does not cause a reaction	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>5(b)(i)</b>	A		<b>(1)</b>

Question Number	Indicative Content	Mark
<b>QWC</b>	<p><b>*5(b)(ii)</b></p> <p>A description including some of the following:</p> <ul style="list-style-type: none"> <li>• alcohol is a drug</li> <li>• alcohol changes the way that the body works</li> <li>• alcohol is known as a depressant</li> </ul> <p><b>Short term:</b></p> <ul style="list-style-type: none"> <li>• eyes/brain affected by blurred vision, dizziness, memory loss</li> <li>• lowering of inhibitions (can lead to accidents), act differently, mood change</li> <li>• slower reaction times (can lead to accidents)</li> <li>• after effects of excess e.g. hangover, headaches</li> </ul> <p><b>Long term:</b></p> <ul style="list-style-type: none"> <li>• liver damage, liver cancer, cirrhosis</li> <li>• (ethics of) liver transplants for alcoholics</li> <li>• brain damage</li> <li>• effects on society described e.g. crime, anti-social behaviour rates</li> <li>• alcoholism, addiction</li> <li>• implications during pregnancy</li> </ul>	<b>(6)</b>
<b>Level</b>	<b>0</b>	No rewardable content
<b>1</b>	<b>1 - 2</b>	<ul style="list-style-type: none"> <li>• a limited description of either short term or long term effects of alcohol abuse</li> <li>• the answer communicates ideas using simple language and uses limited scientific terminology</li> <li>• spelling, punctuation and grammar are used with limited accuracy</li> </ul>
<b>2</b>	<b>3 - 4</b>	<ul style="list-style-type: none"> <li>• a simple description of both the short term and long term effects of alcohol abuse.</li> <li>• the answer is structured in such a way to make the short term and long term effects clear.</li> <li>• the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately</li> <li>• spelling, punctuation and grammar are used with some accuracy</li> </ul>
<b>3</b>	<b>5 - 6</b>	<ul style="list-style-type: none"> <li>• a detailed description of both most short term and long term effects of alcohol abuse including how alcohol affects the nervous system</li> <li>• the answer is structured in such a way to make clear the short term effects, long term effects and effects of alcohol on the nervous system.</li> <li>• the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately</li> <li>• spelling, punctuation and grammar are used with few errors</li> </ul>

Question Number	Answer	Acceptable answers	Mark
<b>6(a)(i)</b>	A – sweat gland B – sebaceous gland		<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>6(a)(ii)</b>	Any two of the following points: <ul style="list-style-type: none"> <li>• (gland) releases sweat / water (and salts) (to the skin surface) (1)</li> <li>• (water) evaporates, (1)</li> <li>• removing heat from the skin (1)</li> </ul>	Accept cools the skin / body	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>6(b)</b>	A		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>6(c)</b>	homeostasis	Accept recognisable spelling	<b>(1)</b>

Question Number		Indicative Content	Mark
<b>QWC</b>	<b>*6(d)</b>	<p>An explanation linking some of the following:</p> <ul style="list-style-type: none"> <li>• nerve endings in the skin will not respond to hot or cold external environments</li> <li>• damaged or blocked sweat glands will not produce sweat to cool the body down</li> <li>• less evaporation of the water in sweat to remove heat</li> <li>• blood vessels in the skin maybe affected</li> <li>• unable to deliver more blood to the skin to lose heat (vasodilation does not need to be mentioned)</li> <li>• blood vessels unable to constrict (vasoconstriction does not need to be mentioned) to conserve heat</li> <li>• no hair so no layer of insulating air to conserve heat</li> <li>• increased chance of infection leading to fever</li> </ul>	<b>(6)</b>
<b>Level</b>	<b>0</b>	No rewardable content	
<b>1</b>	<b>1 - 2</b>	<ul style="list-style-type: none"> <li>• a limited explanation of one mechanism of temperature regulation that is affected by severe burns</li> <li>• the answer communicates ideas using simple language and uses limited scientific terminology</li> <li>• spelling, punctuation and grammar are used with limited accuracy</li> </ul>	
<b>2</b>	<b>3 - 4</b>	<ul style="list-style-type: none"> <li>• a simple explanation of two of the mechanism of temperature regulation that are affected by severe burns</li> <li>• the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately</li> <li>• spelling, punctuation and grammar are used with some accuracy</li> </ul>	
<b>3</b>	<b>5 - 6</b>	<ul style="list-style-type: none"> <li>• a detailed explanation of more than two mechanisms of temperature regulation that are affected by severe burns</li> <li>• the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately</li> <li>• spelling, punctuation and grammar are used with few errors</li> </ul>	



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