

Mark Scheme (Results)

March 2013

GCSE Biology
5BI1F/01

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March 2013

Publications Code UG035086

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Question Number	Answer	Acceptable answers	Mark
1a(i)	A <input checked="" type="checkbox"/> bacterium		(1)

Question Number	Answer	Acceptable answers	Mark
1a(ii)	food (1) viruses (1)		(2)

Question Number	Answer	Acceptable answers	Mark
1a(iii)	A statement to include any two of the following mucus (1) cilia (1) skin (1) (hydrochloric)stomach acid (1) lysozymes / tears (1) OR a detailed description of how one of the above prevents the pathogen entering (2)	scab formation nasal hairs (1)	(2)

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	16 (mm) (1)		(1)

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	<p>An explanation including the following points</p> <ul style="list-style-type: none"> • A (1) • there is a <u>larger</u> / <u>largest</u> area where the bacteria have not grown (1) 	<u>largest</u> light grey area	(2)

Total for question 1 = 8 marks

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	<input checked="" type="checkbox"/> D bb		(1)

Question Number	Answer	Acceptable answers	Mark
2(a)(ii)	Heterozygous		(1)

Question Number	Answer	Acceptable answers	Mark									
2(a)(iii)	A correctly completed Punnett square: <table border="1" style="margin-left: 40px;"> <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>		B	b	b	Bb	bb	b	Bb	bb		(1)
	B	b										
b	Bb	bb										
b	Bb	bb										

Question Number	Answer	Acceptable answers	Mark
2(a)(iv)	50%		(1)

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	An explanation linking the following points: <ul style="list-style-type: none"> • parents were carriers (1) • Sue inherited a recessive allele from each parent / Sue has <u>2</u> recessive alleles (1) 	heterozygous / both parents have a recessive allele accept gene	(2)

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	An description linking the following points: <ul style="list-style-type: none">• build-up of / excess mucus• causing restriction in the lungs• oxygen diffusion is difficult	thick / sticky mucus absorption / taking in / uptake	(2)

Total for Question 2 = 8 marks

Question Number	Answer	Acceptable answers	Mark
3a	<p>The diagram shows two boxes on the left: 'painkiller' and 'hallucinogen'. On the right, there are five boxes: 'morphine', 'caffeine', 'antibiotic', 'nicotine', and 'LSD'. Lines connect 'painkiller' to 'morphine' and 'hallucinogen' to 'LSD'. There are also black dots on the right side of the 'painkiller' and 'hallucinogen' boxes, and on the left side of the 'morphine', 'caffeine', and 'antibiotic' boxes.</p>	<p>1 mark for each correct line</p> <p>If more than 1 line drawn from either box on the left then 0 marks for that box</p>	(2)

Question Number	Answer	Acceptable answers	Mark
3b(i)	a cancer causing substance		(1)

Question Number	Answer	Acceptable answers	Mark
3b(ii)	39.7 and 21.2 (1) 60.9(%)	Two marks for correct answer ECF for correct working of two wrong numbers chosen (1)	(2)

Question Number	Answer	Acceptable answers	Mark
3b(iii)	<p>an explanation to include three of the following points</p> <ul style="list-style-type: none"> • effect on the lungs (1) • breathing problems (1) • effect on oxygen levels (in blood)(1) • reduction (1) 	<p>CO being transported in place of oxygen / carrying capacity</p> <p>any idea of less exercise carried out / harder to exercise</p>	(3)

Question Number	Answer	Acceptable answers	Mark
3c	<p>A description including any two of the following</p> <ul style="list-style-type: none"> • cirrhosis of liver (1) • brain damage (1) • kidney damage (1) 	<p>Do not accept any failure / disease of an organ</p> <p>liver damage</p>	(2)

Total for question 3 = 10 marks

Question Number	Answer	Acceptable answers	Mark
4a(i)	<input checked="" type="checkbox"/> D pancreas		(1)

Question Number	Answer	Acceptable answers	Mark
4a(ii)	insulin		(1)

Question Number	Answer	Acceptable answers	Mark
4(a)(iii)	<p>A description linking two of the following:</p> <ul style="list-style-type: none"> • glucose converted (1) • into glycogen (1) • (glycogen) is stored (1) 	<p>Ignore glucose removal</p> <p>do not accept "glucose being stored in liver" (unless it is "stored <u>as</u> glycogen")</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(b)(i)	<p>A description linking the following:</p> <ul style="list-style-type: none"> • receptors (1) • in the skin (1) • messages sent to the hypothalamus (1) 	<p>accept brain/CNS</p> <p>do not accept spinal cord on its own</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	<p>An explanation linking the following:</p> <ul style="list-style-type: none"> • sweat released (1) • evaporated (1) • body temperature reduced (1) 	<p>"when we sweat"</p> <p>cools body</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(b)(iii)	An explanation linking the following: <ul style="list-style-type: none">• erector muscles (1)• raise the hair (1)• to trap a layer of air / insulate (1)	not trapping warmth /heat	(2)

Total for question 4 = 10 marks

Question Number	Answer	Acceptable answers	Mark
5(a)(i)	190		(1)

Question Number	Answer	Acceptable answers	Mark
5(a)(ii)	<p>A description including any two of the following points</p> <ul style="list-style-type: none"> • an increase in sulfur dioxide will decrease the lichen (1) • comparison / manipulation of figures from at least two areas (1) 	ORA	(2)

Question Number	Answer	Acceptable answers	Mark
5(b)(i)	D <input checked="" type="checkbox"/> stoneflies		(1)

Question Number	Answer	Acceptable answers	Mark
5(b)(ii)	<p>increases (1)</p> <p>nitrates (1)</p>	Answers must be in that order	(2)

Question Number		Indicative Content	Mark
QWC	*5(b)(iii)	<p>A explanation to include some of the following points</p> <ul style="list-style-type: none"> • (over) use of nitrates / fertilisers • nitrates leach out of soil (by rain water) • nitrates dissolved in the rain water move into the stream • algae grow (rapidly) / algal bloom / blocking sunlight • plants underneath the surface cannot grow (photosynthesise) • these underwater plants will die and no oxygen will be produced • bacteria (microbes/microorganisms) break down (decompose / respire) the dead material • the bacteria use up all of the oxygen • oxygen concentration decreases • freshwater shrimp / living organisms cannot survive in anaerobic conditions (lack of oxygen) and will die (reduce in numbers) 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited explanation of one stage of eutrophication. • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> • a simple explanation of two or three stages of how eutrophication can lead to a reduction in the number of living organisms. • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy 	
3	5 - 6	<ul style="list-style-type: none"> • a detailed explanation of four or more stages of how eutrophication can lead to a reduction in the number of living organisms. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

Total for question 5 = 12 marks

Question Number	Answer	Acceptable answers	Mark
6(a)(i)	<p>A suggestion to include two of the following:</p> <ul style="list-style-type: none"> • it has features of both (a fish and amphibian) (1) • it has gills (1) • it has legs / feet (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
6(a)(ii)	<input checked="" type="checkbox"/> A chordata		(1)

Question Number	Answer	Acceptable answers	Mark
6(a)(iii)		<p>1 mark for each correct line</p> <p>If more than 1 line drawn from either box on the left then 0 marks for that box</p>	(2)

Question Number	Answer	Acceptable answers	Mark
6(a)(iv)	<input checked="" type="checkbox"/> C poikilothermic		(1)

Question Number	Indicative Content	Mark
QWC	<p>*6(b)</p> <p>A description including some of the following points:</p> <ul style="list-style-type: none"> • Animalia are multicellular • Animalia do not have cell walls/chlorophyll • Animalia feed heterotrophically / consume / eat • Plantae have cell walls • Plantae have chlorophyll • Plantae feed autotrophically / photosynthesise / makes own food • Plantae are multicellular • Fungi are multicellular / unicellular • Fungi feed saprophytically / lives on / decays • Fungi have cell walls • Fungi do not chlorophyll • Protocista are unicellular • Protocista have a nucleus • Prokaryotes are unicellular • Prokaryotes have no nucleus 	(6)
Level	0	No rewardable content
1	1 - 2	<ul style="list-style-type: none"> • a limited description of at least one kingdom • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy
2	3 - 4	<ul style="list-style-type: none"> • a simple description of two or more kingdoms with at least two different features commented in one of them • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy
3	5 - 6	<ul style="list-style-type: none"> • a detailed description of at least four kingdoms • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors

Total for question 6 = 12 marks

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Order Code UG035086 March 2013

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