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Mark Scheme (Results)

March 2013

GCSE Biology
5BI1F/01

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Question Number	Answer	Acceptable answers	Mark
1a(i)	**A** ☒ 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)	An explanation including the following points • A (1) • there is a larger / largest area where the bacteria have not grown (1)	largest light grey area	**(2)**

Total for question 1 = 8 marks

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	☒ **D** bb		**(1)**

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

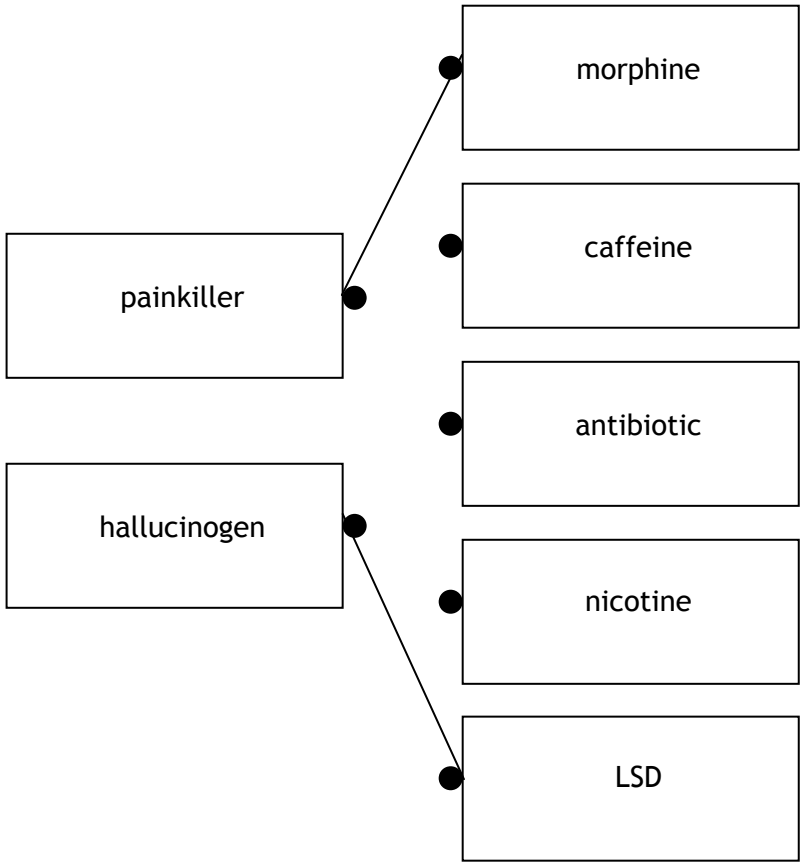
Question Number	Answer	Acceptable answers	Mark
2(a)(iii)	A correctly completed Punnett square: B | b b | Bb | bb b | Bb | bb		**(1)**

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: • parents were carriers (1) • Sue inherited a recessive allele from each parent / Sue has 2 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: • 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		1 mark for each correct line If more than 1 line drawn from either box on the left then 0 marks for that box	**(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)	an explanation to include three of the following points • effect on the lungs (1) • breathing problems (1) • effect on oxygen levels (in blood)(1) • reduction (1)	CO being transported in place of oxygen / carrying capacity any idea of less exercise carried out / harder to exercise	**(3)**

Question Number	Answer	Acceptable answers	Mark
3c	A description including any two of the following • cirrhosis of liver (1) • brain damage (1) • kidney damage (1)	Do not accept any failure / disease of an organ liver damage	**(2)**

Total for question 3 = 10 marks

Question Number	Answer	Acceptable answers	Mark
4a(i)	☒ **D** pancreas		**(1)**

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

Question Number	Answer	Acceptable answers	Mark
4(a)(iii)	A description linking two of the following: • glucose converted (1) • into glycogen (1) • (glycogen) is stored (1)	Ignore glucose removal do not accept "glucose being stored in liver" (unless it is "stored **<u>as</u>** glycogen")	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(i)	A description linking the following: • receptors (1) • in the skin (1) • messages sent to the hypothalamus (1)	accept brain/CNS do not accept spinal cord on its own	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	An explanation linking the following: • sweat released (1) • evaporated (1) • body temperature reduced (1)	"when we sweat" cools body	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(iii)	An explanation linking the following: • 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)	A description including any two of the following points • 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** ☒ stoneflies		**(1)**

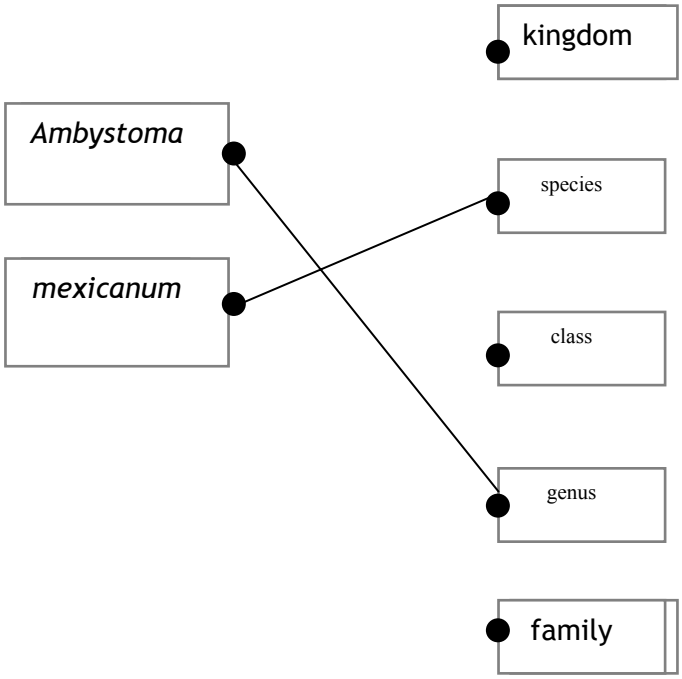
Question Number	Answer	Acceptable answers	Mark
5(b)(ii)	increases (1) nitrates (1)	Answers must be in that order	**(2)**

Question Number		Indicative Content	Mark
QWC	***5(b)(iii)**	A explanation to include some of the following points • (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**	• 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**	• 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**	• 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)	A suggestion to include two of the following: • 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)	☒ **A** chordata		**(1)**

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

Question Number	Answer	Acceptable answers	Mark
6(a)(iv)	☒ **C** poikilothermic		**(1)**

Question Number		Indicative Content	Mark
QWC	***6(b)**	A description including some of the following points: • 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 • Protoctista are unicellular • Protoctista have a nucleus • Prokaryotes are unicellular • Prokaryotes have no nucleus	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	• 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**	• 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**	• 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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