



Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE in Biology
(5BI1F) Paper 01

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014

Publications Code UG039967

All the material in this publication is copyright

© Pearson Education Ltd 2014

Question Number	Answer	Acceptable answers	Mark
1 (a) (i)	29 or 30 and 10 (1) 19 or 20 (°C)	Two marks for correct bald answer Anything between 19 and 20	(2)

Question Number	Answer	Acceptable answers	Mark
1 (a) (ii)	a suggestion including two of the following: snake cannot regulate its internal temperature (1) snake is poikilothermic / cold blooded (1) snakes internal temperature is dependent upon its environment (1)	does not use homeostasis changes with the air temperature / weather / surroundings	(2)

Question Number	Answer	Acceptable answers	Mark
1 (b) (i)	A homeotherms		(1)

Question Number	Answer	Acceptable answers	Mark
1 (b) (ii)	an explanation linking two of the following: sweat contains water (1) (water) evaporates (1) removing heat in the process (1)	Ignore cools down	(2)

Question Number	Answer	Acceptable answers	Mark
1 (c)	B hypothalamus		(1)

(Total for question 1 – 8 Marks)

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	A in the air		(1)

Question Number	Answer	Acceptable answers	Mark
2(a)(ii)	mucus (1) cilia (1)	Answers must be in the correct order	(2)

Question Number	Answer	Acceptable answers	Mark
2(a)(iii)	antibiotics only work on bacteria and fungi / antibiotics do not control viral infections		(1)

Question Number	Answer	Acceptable answers	Mark
2(b)	a description to include the following lysozymes (in tears) / hydrochloric acid (1) (chemicals) kill or destroy the pathogen / infection / bacteria / virus (1)	accept stomach acid Ignore germs	(2)

Question Number	Answer	Acceptable answers	Mark
2(c)	a description to include the following work surfaces could be sprayed and wiped/ hands could be washed with antiseptics/ utensils could be washed with antiseptics (1) (antiseptics) kill or destroy the pathogen / infection / bacteria / virus (1)	Ignore germs	(2)

(Total for question 2 – 8 Marks)

Question Number	Answer	Acceptable answers	Mark
3(a)(i)	B chloroplast containing chlorophyll		(1)

Question Number	Answer	Acceptable answers	Mark
3(a)(ii)	nucleus	nucleus containing DNA	(1)

Question Number	Answer	Acceptable answers	Mark
3(b)	autotrophs saprophytes	Must be in the correct order	(2)

Question Number	Answer	Acceptable answers	Mark
3(c)(i)	the shoot grows towards the light	bends / phototropism / leans reject negative phototropism	(1)

Question Number	Answer	Acceptable answers	Mark
3(c)(ii)	an explanation linking three of the following: (positive) phototropism (1) auxin (1) move to the shaded part of the plant shoot (1) causing (cell) elongation (on the shaded side) (1)	reject negative phototropism more growth (on shaded side)	(3)

Question Number	Answer	Acceptable answers	Mark
3(c)(iii)	for photosynthesis / makes glucose	accept makes food	(1)

Question Number	Answer	Acceptable answers	Mark
3(d)	gravity / gravitational	gravitropism / geotropism	(1)

(Total for question – 10 Marks)

Question Number	Answer	Acceptable answers	Mark
4(a)(i)	41 x 3 / 123 (1) = 45 (ms)	accept 2 marks for bald correct answer accept alternative method (1)	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)(ii)	a description to link the following the higher the dosage the faster the reaction time (1) comparison of two volunteers (1)	drug makes reactions faster volunteer A was <u>fastest</u> / volunteer C was <u>slowest</u>	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)(iii)	an explanation linking the following increase speed / amount of neurotransmitter / neurotransmission (1) across synapses (1)	increase speed of impulses / <u>electrical</u> messages / <u>electrical</u> signals	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)(iv)	D stimulant		(1)

Question Number	Answer	Acceptable answers	Mark
4(b)	A description to include three of the following automatic / involuntary (1) quick reactions (1) spinal cord used (only) (1) relay neurones (1)	 don't have to think about it speeds up reactions / immediate brain not used	 (3)

(Total for question 4 – 10 Marks)

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

Question Number	Answer	Acceptable answers	Mark
5(a)(ii)	<p style="text-align: center;">order of classification</p> <p>The diagram shows a vertical list of classification levels: class, phylum, genus, family, and species. To the left, under the heading 'binomial name', are two boxes: 'Brassica' and 'oleracea'. A line connects 'Brassica' to 'genus', and another line connects 'oleracea' to 'species'.</p>		(2)

Question Number	Answer	Acceptable answers	Mark
5(a)(iii)	<p>An explanation linking the following</p> <p>a change / alteration</p> <p>DNA / gene / chromosome / in the genetic code / gene sequence (2)</p>	<p>DNA / gene / chromosome is wrong / goes wrong / incorrect (1)</p>	(2)

Question Number	Answer	Acceptable answers	Mark
5(a)(iv)	<p>environmental / reproduction / genetic / disease</p> <p>or named examples</p>	<p>Ignore mutation</p> <p>named environmental conditions eg radiation / light / wind / rainfall / diet / weather / climate / pollution</p>	(1)

Question Number		Indicative Content	Mark
QWC	*5(b)	<p>An answer to include some of the following:</p> <ul style="list-style-type: none"> the number of black / resistant insects increases over time the number of white / nonresistant insects decreases over time the insects that were resistant to the pesticide lived to reproduce passing the gene for resistance onto offspring the offspring survived to reproduce those organisms with advantageous adaptations survive poorly adapted organisms such as the white insect die out / become extinct survival of the fittest / natural selection 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> a limited explanation which describes the diagram OR a limited explanation of Darwin's theory of evolution 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 which describes the diagram AND a simple explanation of Darwin's theory of evolution 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 Darwin's theory of evolution supported by evidence from the diagram the answer communicates ideas clearly and coherently and 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 - eutrophication		(1)

Question Number	Answer	Acceptable answers	Mark
6(a)(ii)	<p>An explanation linking three of the following points</p> <p>fertiliser / nitrates leach / moves into the lake (1)</p> <p>algal bloom (1)</p> <p>blocks light / stops (underwater) plants from photosynthesising / (underwater) plants die (1)</p> <p>decomposers break down dead plants (1)</p> <p>uses up oxygen (1)</p> <p>fish cannot <u>respire</u> (1)</p>	<p>not "lake gets polluted"</p> <p>algae grow on surface</p> <p>microorganisms / bacteria</p>	(3)

Question Number	Answer	Acceptable answers	Mark
6(a)(iii)	<p>type of water</p> <p>polluted water</p> <p>clean water</p> <p>indicator species</p> <p>lichen</p> <p>stonefly</p> <p>blackspot fungus</p> <p>bloodworm</p> <p>oxpeckers</p> <pre> graph LR subgraph "type of water" PW[polluted water] CW[clean water] end subgraph "indicator species" L[lichen] S[stonefly] BF[blackspot fungus] BW[bloodworm] OP[oxpeckers] end PW --- S PW --- BF CW --- BW CW --- OP </pre>		(2)

Question Number		Indicative Content	Mark
QWC	*6b	<p>A description to include some of the following processes of the carbon cycle:</p> <ul style="list-style-type: none"> • Photosynthesis by plants • Remove carbon dioxide from the atmosphere / taken in by plants • Converted into organic compounds / glucose • Respiration by organisms / plants / animals • Use glucose to create carbon dioxide • Release carbon dioxide back into atmosphere / breathed out by animals • Feeding by animals • Eating of the carbon compounds found in animals and plants • Decomposers feed off of dead organisms • Carbon dioxide release back into the atmosphere • As a waste gas of decaying process • Combustion of fossil fuels • Oil and gas contain carbon compounds and when burnt • Release carbon dioxide back into atmosphere 	(6)
Level I	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited description of one or more processes of the carbon cycle • 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 of the processes of the carbon cycle • 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 three or more processes of the carbon cycle • the answer communicates ideas clearly and coherently and uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

(Total for question 6 = 12 marks)

