

Mark Scheme (Results)

March 2013

GCSE Biology
5BI2F/01

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Question Number	Answer	Acceptable answers	Mark
1(a)	<p>enzyme</p> <p>molecule that the enzyme digests</p> <p>amylase ●</p> <p>lipase ●</p> <p>DNA ●</p> <p>fat (1) ●</p> <p>protein ●</p> <p>starch ●</p> <p>(1)</p>		(2)

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

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	B pepsin has an optimum pH of 3		(1)

Question Number	Answer	Acceptable answers	Mark
1(b)(iii)	<p>A description including two from the following points</p> <ul style="list-style-type: none"> pepsin has a lower activity pepsin works at a lower pH pepsin works within a narrower pH range the optimum pH of pepsin is lower 	<p>ORA</p> <p>Accept: pepsin works in acidic conditions</p>	(2)

Question Number	Answer	Acceptable answers	Mark
1(b)(iv)	<p>A explanation linking the following points</p> <ul style="list-style-type: none"> • it is less active/activity only 6 arbitrary units (1) • (starting to) denature (1) • active site is changing shape (1) • cannot bind to its substrate as well at this pH (1) 	<p>Accept: reference to pH9 being the optimum/pH11 is not the optimum</p>	(2)

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	B - oligosaccharides		(1)

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	<ul style="list-style-type: none"> • 15000 - 8000 (1) • 7000 (1) 	Accept: ecf - a sum that includes any value from 14200 to 15000 as alternative to 15000 minus 8000 and its correct answer e.g. 14200 – 8000 = 6200 (1 maximum) 2 marks for correct bald answer	(2)

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	A description that includes: increases number of useful bacteria	Ignore numbers	(1)

Question Number	Answer	Acceptable answers	Mark
2(c)(i)	objective lens / eye piece lens	lens	(1)

Question Number	Answer	Acceptable answers	Mark
2(c)(ii)	<p>A description including two of the following:</p> <ul style="list-style-type: none"> • Image has more clarity/is more clear(1) • More detail can be seen(1) • Larger image can be seen(1) 	<p>Accept: more focussed</p> <p>Accept: named bacterial cell components</p> <p>Accept: idea of greater magnification</p>	(2)

Question Number	Answer	Acceptable answers	Mark
2(c)(iii)	<p>Any one of the following:</p> <ul style="list-style-type: none"> • cell wall • flagellum 	<p>Accept: cell membrane</p> <p>Ignore: tail</p>	(1)

Question Number	Answer	Acceptable answers	Mark
3(a)(i)	mitosis (1)	Do not accept meiosis or any word that sounds similar	(1)

Question Number	Answer	Acceptable answers	Mark
3(a)(ii)	B - getting longer		(1)

Question Number	Answer	Acceptable answers	Mark
3(a)(iii)	An description linking the following points <ul style="list-style-type: none"> idea that cells are becoming specialised (1) to perform a specific function / eq (1) eg phloem, xylem, root hair cell (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
3(b)(i)	<ul style="list-style-type: none"> total = 30.3 (1) mean = 10.1 (1) 	<p>2 marks for correct bald answer</p> <p>Accept: incorrect values in sum $\div 3 =$ correct answer e.g. $(20.4 + 14.6 + 10.6) \div 3 = 15.2$ (1 mark max)</p>	(2)

Question Number	Answer	Acceptable answers	Mark
3(b)(ii)	A suggestion including two from the following points <ul style="list-style-type: none"> fertilisers increase plant height/growth (1) A has a greater effect than B/ A has a greater effect than C/ B has a greater effect than C (1) A has the greatest effect/C has the least effect (1) 	<p>Accept: Fertiliser A/B/C increases height/growth (1)</p> <p>ORA Accept: reference to compared figures/correct manipulation of figures (1)</p>	(2)

Question Number	Answer	Acceptable answers	Mark
3(b)(iii)	Any two from the following points <ul style="list-style-type: none"> • shoot/stem diameter (1) • number of branches (1) • number of leaves/flowers (1) • length/surface area of leaves (1) • length of roots (1) • size of fruit (1) • number/yield of fruit (1) 	Accept: size of leaves Accept: mass/dry mass/weight of plant/fruit (1)	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)(i)	<p>A description that includes two of the following points</p> <ul style="list-style-type: none"> • gametes produced (1) • haploid cells / half the number of chromosomes (1) • genetically different (1) 	<p>Accept: sex cells are produced Accept: 23 chromosomes</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)(ii)	<p>A description that includes two of the following points</p> <ul style="list-style-type: none"> • idea that sperm and egg cell/gametes join (1) • genetic information combines (1) • zygote produced (1) 	<p>Accept sex cells join Accept: chromosomes/DNA combines Accept: diploid cell</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(b)	<p>Suggestions that include one advantage from</p> <ul style="list-style-type: none"> • differentiate into any (body) cell • grow/repair tissues/ body organ / limb • for transplants <p>and one disadvantage from</p> <ul style="list-style-type: none"> • embryos are destroyed • can become cancerous • justified ethical issue e.g some people feel that embryo has a right to life 	<p>Accept: research cures/treatments for disease/named genetic disease/Parkinsons/cancer/diabetes</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(c)(i)	<p>A description that includes three of the following points</p> <ul style="list-style-type: none"> • two strands (1) • double helix (1) • reference to bases (1) • A with T / G with C (1) • hydrogen bonds (1) 	<p>Accept: description e.g twisted ladder</p> <p>Accept: complimentary pairs</p>	(3)

Question Number	Answer	Acceptable answers	Mark
(4)(c)(ii)	C protein		(1)

Question Number	Answer	Acceptable answers	Mark
5(a)(i)	B 80 cm ³		(1)

Question Number	Answer	Acceptable answers	Mark
5(a)(ii)	<p>A description that includes two of the following:</p> <ul style="list-style-type: none"> • it increases from rest to low intensity (1) • low to moderate intensity stays the same (1) • increases from moderate (1) • reference to compared figures/correct manipulation of figures (1) 	<p>Accept: increases as exercise intensity increases (1)</p>	(2)

Question Number	Answer	Acceptable answers	Mark
5(a)(iii)	<p>A explanation that includes three of the following</p> <ul style="list-style-type: none"> • (more) oxygen needed (1) • (more) glucose needed (1) • for (aerobic) respiration (1) • which releases (more) energy (1) • so that muscles can work for longer/harder (1) 	<p>Accept: reduce muscle fatigue/cramp</p> <p>Accept: to reduce build up of lactic acid (1) remove carbon dioxide/waste from cells (1) maintain body temperature (1)</p>	(3)

Question Number		Indicative Content	Mark
QWC	*5(b)	<p>An explanation including some of the following points in a logical sequence</p> <ul style="list-style-type: none"> • two sides to prevent mixing of blood • left side deals with oxygenated blood • thicker wall of left ventricles • pump blood to body • right side deals with deoxygenated blood • pumps blood to lungs • muscular wall of ventricles which contract • atria receive blood • valves to prevent backflow • correct reference to (named) arteries/veins 	(6) exp
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited explanation that links one structure to its function e.g. the right side pumps blood (to the lungs) OR the pulmonary vein takes blood into the heart. • 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 that links two different structures in the heart to their function e.g. right ventricle pumps blood to the lungs AND atria receive blood • 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 that covers most of the indicative content and that includes at least three different structures linked to their function • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

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

Question Number	Answer	Acceptable answers	Mark
6(a)(ii)	<p>A explanation that includes any two of the following points</p> <ul style="list-style-type: none"> contains chloroplasts (1) containing chlorophyll (1) which absorb light energy (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
6(b)(i)	<ul style="list-style-type: none"> Any value between 24 °C to 28°C 	units (°C) must be given	(1)

Question Number	Answer	Acceptable answers	Mark
6(b)(ii)	<p>A description that includes two of the following:</p> <ul style="list-style-type: none"> named limiting factor e.g water, carbon dioxide, light (1) described effect on rate of photosynthesis e.g (lower light intensity) lower rate of photosynthesis (1) 	ORA	(2)

Question Number		Indicative Content	Mark
QWC	*6(c)	<p>A description including some of the following points in a logical sequence</p> <ul style="list-style-type: none"> • (water moves into) root hair cells • by osmosis • from a high concentration (of water) • to a low concentration (of water) • down a concentration gradient • through a partially permeable membrane • through xylem vessels • by capillary action • (into leaves) and out through the stomata • reference to transpiration/transpiration stream 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited description of how water enters the plant OR how water moves through the plant e.g. water goes into the roots from the soil OR water goes up the stem • 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 that includes a reference to root hair cells OR xylem vessels OR osmosis in the correct context. • 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 that includes a reference to root hair cells AND xylem vessels AND osmosis in the correct context. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

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