



Mark Scheme (Results)

Summer 2026

Pearson Edexcel International GCSE in Biology

4BI1/1BR

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Additional guidance	Mark
1(a)(i)	<p>An answer that makes reference to one of the following points:</p> <ul style="list-style-type: none"> • grow / eq (1) • respire / respiration (1) • nutrition / eq (1) • excrete / excretion (1) • control (internal conditions) (1) • reproduce / reproduction (1) 	Ignore move / sensitivity / respond to surroundings	1

Question Number	Answer	Mark
1(a)(ii)	<p>The only correct answer is</p> <p>C (<i>Plasmodium</i>)</p> <p><i>A is not the answer as Amoeba does not cause malaria</i></p> <p><i>B is not the answer as Chlorella does not cause malaria</i></p> <p><i>D is not the answer as Pneumococcus does not cause malaria</i></p>	1

Question Number	Answer	Additional guidance	Mark
1(a)(iii)	<p>$44 / 3 = \text{x}14.33333$ up to $\text{x}15$ (2 marks)</p> <p>One mark for:</p> <p>Correct measurement with units (43 mm / 4.3 cm)</p> <p>OR</p> <p>$\div 3, \div 0.3, \div 30$, answer between $\text{x}1.43333$ and $\text{x}1.5$</p>	<p>Accept length between 43 mm and 45 mm</p> <p>OR</p> <p>4.3 cm to 4.5 cm</p> <p>Correct answer gains all marks</p>	2

Question Number	Answer	Additional guidance	Mark
1(b)	<p>A description that makes reference to three of the following points:</p> <ul style="list-style-type: none"> • lymphocytes (1) • (lymphocytes) release antibodies / antitoxins (1) • phagocytes (1) • (phagocytes) ingest / engulf / digest (pathogens) / eq (1) 	<p>Max one only for one function but no named wbc</p> <p>Accept phagocytosis for two marks</p>	3

(Total for Question 1 = 7 mark)

Question Number	Answer	Mark
2(a)(i)	<p>The only correct answer is</p> <p>C (L)</p> <p><i>A is not the answer as J does not make sperm</i></p> <p><i>B is not the answer as K does not make sperm</i></p> <p><i>D is not the answer as M does not make sperm</i></p>	1

Question Number	Answer	Additional guidance	Mark
2(a)(ii)	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> (meiosis) halves the chromosome number / (meiosis) produces haploid (cells) / sperm are haploid / gametes are haploid / eq (1) so chromosome number (of zygote) is restored / zygote is diploid / eq (1) generates <u>genetic</u> variation / eq (1) 	<p>Accept produces sperm with 23 chromosomes</p> <p>Accept produces one set of chromosomes</p> <p>Accept produces full set of chromosomes (after fertilisation)</p> <p>Accept zygote has 46 chromosomes / fertilised egg has 46 chromosomes</p>	2

Question Number	Answer	Additional guidance	Mark
2(b)(i)	<p>1.9×10^8 (2 marks)</p> <p>One mark for 190 000 000</p>	<p>Accept 1.88×10^8 Accept 1.875×10^8 Accept 1.87×10^8</p> <p>Accept 187 500 000 Accept 187 000 000 Accept 188 000 000 Accept 19×10^7 etc</p> <p>Correct answer with no working gains both marks</p>	2

Question Number	Answer	Additional guidance	Mark
2(b)(ii)	<p>An answer that makes reference to the following points:</p> <ul style="list-style-type: none"> (some) sperm do not reach the egg / (some) sperm die / (some) sperm do not reach oviduct / (some) sperm cannot move (well) / (some) sperm cannot swim / (some) sperm are defective / (some) sperm are not viable / eq (1) so cannot <u>fertilise</u> egg / cannot <u>fuse</u> with egg / <u>fertilisation</u> does not occur / eq (1) 	<p>Accept not enough to ensure <u>fertilisation</u></p>	2

Question Number	Answer	Additional guidance	Mark
2(b)(iii)	<p>A description that makes reference to three of the following points:</p> <ul style="list-style-type: none"> • <u>fertilisation</u> occurs (1) • sperm and egg (nuclei) <u>fuse</u> (1) • <u>zygote</u> is formed (1) • <u>mitosis</u> occurs (to form embryo) (1) 	<p>Also accept sperm digests path through (jelly) coat (1)</p>	3

(Total for Question 2 = 10 marks)

Question Number	Answer	Mark
3 (a)(i)	<p>The only correct answer is</p> <p>A (amino acids)</p> <p><i>B is not the answer as fatty acids are not in proteins</i></p> <p><i>C is not the answer as glucose is not in proteins</i></p> <p><i>D is not the answer as maltose is not in proteins</i></p>	1

Question Number	Answer	Mark
3 (a)(ii)	<p>The only correct answer is</p> <p>D (stomach and pancreas)</p> <p><i>A is not the answer as the colon does not make protease</i></p> <p><i>B is not the answer as the gall bladder does not make protease</i></p> <p><i>C is not the answer as the oesophagus does not make protein</i></p>	1

Question Number	Answer	Additional guidance	Mark
3(a)(iii)	<p>A description that makes reference to two of the following points:</p> <p>add biuret (solution) / eq (1)</p> <p>lilac / purple / mauve / violet / eq (1)</p>	<p>Accept adding NaOH and copper sulfate</p> <p>Accept pink</p> <p>Accept use Clinistix / Albustix / uristix and goes green / blue for two marks</p>	2

Question Number	Answer	Additional guidance	Mark
3(b)(i)	<p>A description that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • decrease <u>and</u> increase / eq (1) • (decrease up to) 39 °C / (increase after) 39 °C / eq (1) 	Accept range between 38 and 40 inclusive	2

Question Number	Answer	Additional guidance	Mark
3(b)(ii)	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • (kinetic) energy increases (1) • so particles / enzymes / substrates <u>move</u> faster / eq (1) • more collisions (between enzyme and substrate) / more E/S complexes / eq (1) 	Accept alternatives to particles	2

Question Number	Answer	Additional guidance	Mark
3(b)(iii)	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • (enzymes) <u>denature</u> (1) • so <u>shape</u> of enzyme changes / active site changes / eq (1) • fewer E/S complexes / E/S complexes cannot form / substrate does not fit into active site / enzyme and substrate do not bind / enzyme and protein do not bind / pepsin and protein do not bind / eq (1) 	Accept enzyme and substrate are not complementary	2

(Total for Question 3 = 10 marks)

Question Number	Answer	Mark
4(a)	<p>The only correct answer is</p> <p>D (respiration)</p> <p><i>A is not the answer as combustion does not occur in cattle</i></p> <p><i>B is not the answer as decomposition does not occur from cattle</i></p> <p><i>C is not the answer as photosynthesis removes carbon dioxide</i></p>	1

Question Number	Answer	Mark
4(b)	<p>The only correct answer is</p> <p>B (CFCs and water vapour)</p> <p><i>A is not the answer as oxygen is not a greenhouse gas</i></p> <p><i>C is not the answer as nitrogen is not a greenhouse gas</i></p> <p><i>D is not the answer as oxygen is not a greenhouse gas</i></p>	1

Question Number	Answer	Additional guidance	Mark
4(c)(i)	<p>An answer that makes reference to five of the following points:</p> <ol style="list-style-type: none"> 1. organic releases less methane / eq (1) 2. organic releases less CO₂ from <u>food</u> / eq (1) 3. organic farming releases less CO₂ from <u>machinery</u> / eq (1) 4. organic farming removes more CO₂ in <u>fields</u> / <u>plants</u> eq (1) 	<p>Accept converse</p> <p>Accept converse</p> <p>Accept converse</p> <p>Accept converse</p> <p>If no mp 2,3,4 then award one mark for: organic releases less CO₂ / conventional releases more CO₂</p>	5

	<p>5. organic absorbs more CO₂ than it releases / conventional releases more CO₂ than it absorbs / eq (1)</p> <p>6. credit correct manipulated data (1)</p> <p>7. less machinery in organic/ less fuel used in organic / eq (1)</p> <p>8. nitrous oxide release is the same for both / eq (1)</p> <p>9. only one study / no information about gas impacts / unknown cattle breeds / unknown number of cattle / unknown areas of land used / unknown food used / unknown plant species in fields / eq (1)</p> <p>10. organic is better (for environment) / organic is more sustainable / organic has less impact on greenhouse effect / eq (1)</p>	<p>Accept overall organic has net reduction of (atmospheric) CO₂ / conventional has net release of (atmospheric) CO₂ / eq</p> <p>e.g. 2 more methane released / 5x more CO₂ released from food</p> <p>Accept converse Accept less electricity used in organic</p> <p>Accept no repeats</p> <p>Accept converse Accept more sustainable</p>	
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Question Number	Answer	Additional guidance	Mark
4(c)(ii)	<p>An answer that makes reference to three of the following points:</p> <ul style="list-style-type: none"> reduced greenhouse gas (release) / less fossil fuel burning / sustainable electricity / less global warming / no fuel costs / can be used in remote locations / less noise pollution / renewable / less CO₂ release / eq (1) do not work in dark / do not work at night / not consistent supply of electricity / damages habitats / increased food prices / high initial cost / large area required / reliant on weather / takes up space / buying panels is expensive / eq (1) 	<p>Accept less acid rain / sulfur dioxide</p> <p>Accept they are an eyesore / damages pastures / takes up farmland / can affect food webs / eq</p>	2

(Total for Question 4 = 9 marks)

Question Number	Answer	Mark
5(a)(i)	<p>The only correct answer is</p> <p>A (W)</p> <p><i>B is not the answer as animal cells have no cell wall</i></p> <p><i>C is not the answer as animal cells have no chloroplasts</i></p> <p><i>D is not the answer as animal cells have no vacuole</i></p>	1

Question Number	Answer	Additional guidance	Mark
5(a)(ii)	<p>An explanation that makes reference to four of the following points: (mark in pairs)</p> <ol style="list-style-type: none"> 1. cells have rectangular shapes / elongated shapes / cells packed closely together / cells densely packed / eq (1) 2. so exposed to (more) light / absorb carbon dioxide / eq (1) <p>OR</p> <ol style="list-style-type: none"> 3. many chloroplasts / chloroplasts move / eq (1) 4. to absorb <u>light</u> / eq (1) <p>OR</p> <ol style="list-style-type: none"> 5. close to upper surface / close to (upper) epidermis / at top of leaf / near cuticle / eq (1) 6. receives more light / so closer to the light / fewer cell layers for light to pass through / to absorb light / eq (1) <p>OR</p> <ol style="list-style-type: none"> 7. close to spongy mesophyll / close to air spaces / eq (1) 8. so cells can obtain carbon dioxide / eq (1) <p>OR</p>	<p>Accept cells have long vertical shapes</p> <p>Accept to trap light</p> <p>Accept exposed to light</p>	4

	<p>9. close to xylem / close to phloem / close to vascular tissue / eq (1)</p> <p>10.to obtain water (from xylem) / to transport sucrose (in phloem) / eq (1)</p>		
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Question Number	Answer	Additional guidance	Mark
5(b)(i)	52% (2) one mark only for 51.9..... OR one mark only for 77-37 or 40 or $\div 77$	Correct answer gains all marks	2

Question Number	Answer	Additional guidance	Mark
5(b)(ii)	time (for discs to rise) / rate of photosynthesis (1)		1

Question Number	Answer	Additional guidance	Mark
5(b)(iii)	<p>An answer that makes reference to five of the following points:</p> <ol style="list-style-type: none"> 1. increasing temperature decreases time / increasing temperature increases rate (of photosynthesis) / eq (1) 2. increasing temperature between 20 °C and 30 °C at 0.5% has little effect / eq (1) 3. as more kinetic energy / faster enzyme action / more collisions / more enzyme activity / eq (1) 4. increasing sodium hydrogen carbonate has no effect at <u>10</u> (°C) / eq (1) 5. increasing concentration of sodium hydrogen carbonate at <u>30</u> (°C), decreases time / increasing concentration of sodium hydrogen carbonate at <u>20</u> (°C) decreases time / eq (1) 	<p>Accept high(est) time at 10 °C / low(est) time at 30 °C / eq</p> <p>Accept CO₂ for all mps</p> <p>Accept faster (photosynthesis) with more sodium hydrogen carbonate at 30 °C / faster (photosynthesis) with more sodium</p>	5

	<p>6. oxygen (production) causes discs to rise / eq (1)</p> <p>7. temperature is (main) limiting factor at 10 °C / temperature is (main) limiting factor at 20 °C / eq (1)</p> <p>8. carbon dioxide is limiting between 20 °C and 30 °C / after 20 °C / at 30 °C / eq (1)</p> <p>9. data is reliable (as repeats are similar) / some data may be anomalous / more concentrations should be used / smaller temp intervals / eq (1)</p> <p>10. light (intensity) is controlled / same sized discs used / no mention of species of plant / eq (1)</p>	<p>hydrogen carbonate at 30 °C</p> <p>Accept repeats were done (so data quality is good)</p>	
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(Total for Question 5 = 13 marks)

Question Number	Answer	Mark
6(a)(i)	<p>The only correct answer is</p> <p>A (anther)</p> <p><i>B is not the answer as the filament does not make pollen</i></p> <p><i>C is not the answer as the stigma does not make pollen</i></p> <p><i>D is not the answer as the style does not make pollen</i></p>	1

Question Number	Answer	Mark
6(a)(ii)	<p>The only correct answer is</p> <p>C (ovule)</p> <p><i>A is not the answer as the anther makes pollen</i></p> <p><i>B is not the answer as the ovary forms the fruit</i></p> <p><i>D is not the answer as the petal does not form seeds</i></p>	1

Question Number	Answer	Additional guidance	Mark
6(b)	<p>A description that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • breed plants with compact flowers / breed plants with (desirable) characteristics / eq (1) • select and breed offspring (with compact flowers) / repeat (breeding) over several generations / eq (1) 		2

Question Number	Answer	Additional guidance	Mark
6(c)(i)	<p>A description that makes reference to three of the following points:</p> <ul style="list-style-type: none"> • restriction enzymes cut out the gene / eq (1) • use of plasmid (1) • use ligase to join gene (into plasmid) (1) • insert (recombinant plasmid / DNA) into plant <u>cells</u> (1) 	<p>Accept restrictive Accept DNA / plasmid</p> <p>Accept vector</p> <p>Accept join DNA / join gene</p>	3

Question Number	Answer	Additional guidance	Mark
6(c)(ii)	<p>An answer that makes reference to five of the following points:</p> <ol style="list-style-type: none"> 1. more pesticide producing maize grown / more insecticide producing maize grown / eq (1) 2. more herbicide resistant maize grown / eq (1) 3. less pesticide used / less insecticide used / eq (1) 4. (due to less pesticides) fewer (non-target) insects killed / fewer pollinators killed / fewer animals killed / eq (1) 5. (reduced pesticides cause) less bioaccumulation / less food chain damage / less ecosystem damage / eq (1) 6. more herbicide used / eq (1) 	<p>Accept crops for maize Accept GM maize has increased for mp1 or mp2 if not present otherwise Accept <u>Both</u> types of gm maize increase = mp1 and mp2</p> <p>Accept named species, e.g. bees Accept less risk of development of insecticide / pesticide resistance</p>	5

	<p>7. herbicides could spread to other areas / herbicides kill wild plants / kill other plants / eq (1)</p> <p>8. (herbicides) may damage food chains / food webs / cause loss of food sources / may harm ecosystems / eq (1)</p> <p>9. use of herbicides could cause resistance to develop in other plants / eq (1)</p> <p>10. (trans)genes may spread into wild plants / GM plants may breed with wild plants / GM plants could outcompete wild plants / eq (1)</p>	<p>Accept weedkiller Accept decreases and then <u>increases</u></p>	
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(Total for Question 6 = 12 marks)

Question Number	Answer	Additional guidance	Mark
7(a)(i)	<p>1652 OR 1653 = 3 marks (3)</p> <p>1651.797 up to 1652.6348... (2) = 2 marks</p> <p>One mark only for any one of:</p> <p>0.36 up to 0.37 (1 mark) (ignore dps)</p> <p>×150 (1 mark)</p> <p>×30 (1 mark)</p> <p>×4500 (1 mark)</p>	<p>Correct answer gains all marks</p>	3

Question Number	Answer	Additional guidance	Mark
7(a)(ii)	<p>An explanation that makes reference to four of the following points:</p> <p>(mark two pairs only)</p> <ul style="list-style-type: none"> • one cell thick wall / thin wall / eq (1) • short distance for <u>diffusion</u> / short distance for <u>active transport</u> / eq (1) <p>OR</p> <ul style="list-style-type: none"> • capillaries / blood supply / blood vessels / eq (1) • (maintain concentration / diffusion) gradient / eq (1) <p>OR</p> <ul style="list-style-type: none"> • lacteal (1) • absorbs / transports (digested) lipids / (digested) fats / fatty acids / glycerol / eq (1) <p>OR</p> <ul style="list-style-type: none"> • microvilli / folded membrane / elongated shape of villus / eq (1) • large surface area / eq (1) 	<p>Accept one cell thick Accept thin membrane Ignore thin cell membrane Reject cell wall</p> <p>Accept absorption of fat-soluble vitamins</p> <p>Ignore large surface area unqualified</p>	4

Question Number	Answer	Additional guidance	Mark																				
7(b)(i)	<ul style="list-style-type: none">both linear scales that use at least 2.5 grid squares vertically and 3 grid squares horizontally (both lines combined) (1)straight line joining points (1)axes labelled with units (1)plots correct +/- one square (1)key for lines (1) <table><tr><th rowspan="2">Age in years</th><th colspan="2">Height in cm</th></tr><tr><th>child without coeliac disease</th><th>child with coeliac disease</th></tr><tr><td>3</td><td>105</td><td>95</td></tr><tr><td>4</td><td>110</td><td>97</td></tr><tr><td>5</td><td>117</td><td>100</td></tr><tr><td>6</td><td>125</td><td>104</td></tr><tr><td>7</td><td>130</td><td>110</td></tr></table>	Age in years	Height in cm		child without coeliac disease	child with coeliac disease	3	105	95	4	110	97	5	117	100	6	125	104	7	130	110	<p>Accept axes either way round</p> <p>Reject if extrapolated</p> <p>Minimum label: height in cm age in yr</p> <p>Max 4 for bar chart (mp1, mp3, mp4, mp5 (key for bars)</p> <p>If one set of plots, accept mp1 (if scale is large enough), mp2, mp3</p>	5
Age in years	Height in cm																						
	child without coeliac disease	child with coeliac disease																					
3	105	95																					
4	110	97																					
5	117	100																					
6	125	104																					
7	130	110																					

Question Number	Answer	Additional guidance	Mark
7(b)(ii)	<p>An explanation that makes reference to three of the following points:</p> <p>max two from</p> <ul style="list-style-type: none"> reduced <u>surface area</u> (1) so less diffusion / active transport (1) so fewer nutrients absorbed / eq (1) 	<p>Accept named correct nutrients, e.g. minerals, glucose,</p>	3

	and max two from: <ul style="list-style-type: none"> • less glucose / fat for respiration / energy / eq (1) • fewer amino acids for protein synthesis / eq (1) • less named vitamin for linked function (1) • less named mineral for linked function (1) 	vitamins, amino acids Ignore protein / starch absorbed e.g. vitamin C for skin / gums / avoid scurvy e.g. calcium for bones / prevent rickets	
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Question Number	Answer	Additional guidance	Mark
7(b)(iii)	An answer that makes reference to one of the following points: <ul style="list-style-type: none"> • diet / eq (1) • activity / exercise levels / eq (1) • other health conditions / health / eq (1) • genetics / eq (1) • sex (1) 	Accept gender	1

(Total for Question 7 = 16 marks)

Question Number	Answer	Additional guidance	Mark
8(a)(i)	Aa (and Aa) (1)		1

Question Number	Answer	Additional guidance	Mark
8(a)(ii)	<ul style="list-style-type: none"> gametes as A and a and A and a (1) correct offspring genotypes (1) AA, Aa, Aa, aa correct probability of $\frac{1}{4}$ or 25% or 0.25 for banded snails (1) correct calculation of $\frac{1}{4} \times 120 = 30$ (1) 	<p>Accept mp1 and mp2 from Punnet square</p> <p>Accept ECF for wrong genotypes in (a)(i) for mp1 and mp2 only</p> <p>Accept $\frac{3}{4}$ / 0.75 / 75% probability of unbanded snail</p> <p>Accept 3:1 ratio</p> <p>Accept 30 (with no working) for mp3 and mp4</p>	4

Question Number	Answer	Additional guidance	Mark
8(b)(i)	<p>A description that makes reference to three of the following points:</p> <ul style="list-style-type: none"> use quadrat / grid area (1) random (placement) (1) count (number of) snails (in quadrat) (1) 	Reject quadrant once	3

	<ul style="list-style-type: none"> • repeat / eq (1) • scale up by multiplying area by density (1) 	Accept quadrats for mp1 and mp2 (2 marks)	
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Question Number	Answer	Additional guidance	Mark
8(b)(ii)	<p>An explanation that makes reference to four of the following points:</p> <ul style="list-style-type: none"> • more unbanded snails (in woodland) / fewer banded snails (in woodland) / eq (1) • mutation (generated variation) (1) • (unbanded) camouflaged / (unbanded) not seen by birds / birds eat more (banded) snails / (unbanded) snails survive / eq (1) • (unbanded) snails reproduce (more) / produce offspring / eq (1) • (unbanded) allele / gene is passed on / eq (1) 	<p>Max 3 if no reference to banded / unbanded OR banded / unbanded are wrong way round</p> <p>Accept converse for banded</p> <p>Accept converse for banded</p> <p>Accept converse for banded</p>	4

Question Number	Answer	Additional guidance	Mark
8(b)(iii)	<p>An explanation that makes reference to three of the following points:</p> <ul style="list-style-type: none"> banding pattern is (controlled by) one gene / one pair of alleles / eq (1) (banding pattern) has discontinuous variation / discrete variation / (shell colour) has continuous variation (1) colour is <u>polygenic</u> (1) (colour) so has multiple genes / many genes (1) (colour) may have environmental effect / eq (1) 	<p>Accept (only) two alleles Accept is monogenic Accept (controlled by) a gene</p> <p>Accept many alleles / multiple alleles</p> <p>Accept named environment factor e.g. diet / sunlight</p>	3

(Total for Question 8 = 15 marks)

Question Number	Answer	Additional guidance	Mark
9(a)	<ul style="list-style-type: none"> • receptors / sensory nerve endings (1) • impulses (1) • sensory (1) • motor (1) • neurotransmitters (1) • contract (1) 		6

Question Number	Answer	Additional guidance	Mark
9(b)(i)	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • so pupil constricts / pupil gets narrower / eq (1) • <u>circular</u> muscles (in iris) have contracted / <u>radial</u> muscles (in iris) relaxed (1) • to reduce light entering eye / so less light enters eye / prevents damage to the eye / eq (1) 	Reject ciliary	2

Question Number	Answer	Additional guidance	Mark
9 (b)(ii)	<p>An answer that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • pupil does not reduce in size / pupil does not change / iris does not increase in size / eq (1) • circular muscle does not contract / radial muscle stays contracted / eq (1) • (atropine interferes with) neurotransmitter /(atropine interferes with) chemical messengers / eq (1) 	<p>Accept pupil stays dilated / pupil does not respond</p> <p>Accept affects diffusion across synapse</p>	2

Question Number	Answer	Additional guidance	Mark
9(b)(iii)	<p>An answer that makes reference to the following points:</p> <ul style="list-style-type: none"> • keeps pupil large / wide / dilated / prevents pupil constricting / prevents iris contracting / eq (1) • when shining light into eye / in bright light / eq (1) 	<p>Accept (light) would cause the pupil reflex / would cause pupil to constrict / cause iris to contract</p>	2

(Total for Question 9 = 12 marks)

Question Number	Answer	Additional guidance	Mark
10	<p>An answer that makes reference to six of the following points:</p> <ul style="list-style-type: none"> • C: use different temperatures / hot and cold / eq (1) • O: same species / type / age / mass / sex / of mayfly / eq (1) • R: repeats / eq (1) • M1: count movements of gills / measure distance gill moves / eq (1) • M2: in stated time / eq (1) • S1 & S2: same pH / water volume / light / food / salinity / substrate / same oxygen / same tank size / same space / same carbon dioxide / same number per tank / eq (2) 	<p>Accept same mayfly</p> <p>Accept multiple mayflies / groups / eq</p> <p>Accept measure how long it takes to do set number of movements / move set distance = 2 marks</p> <p>Accept area / volume of tank for size</p> <p>Ignore freshwater</p> <p>Ignore amount of water</p>	6

(Total for Question 10 = 6 marks)