Pearson Edexcel

Mark Scheme

Mock Set 2 – Autumn 2018

Pearson Edexcel GCSE
In Biology (1BI0) Paper 2H

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General Marking Guidance

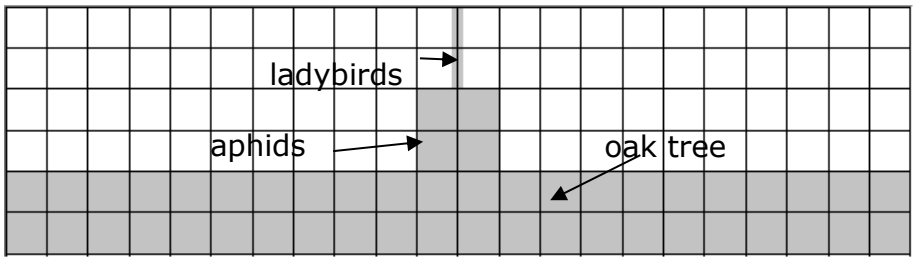
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should 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.

Mark schemes have been developed so that the rubric of each mark scheme reflects the characteristics of the skills within the AO being targeted and the requirements of the command word. So, for example, the command word 'explain' requires an identification of a point and then reasoning/justification of the point.
Explain questions can be asked across all AOs. The distinction comes whether the identification is via a judgment made to reach a conclusion, or, making a point through application of knowledge to reason/justify the point made through application of understanding. It is the combination and linkage of the marking points that is needed to gain full marks.
When marking questions with a 'describe' or 'explain' command word, the detailed marking guidance below should be consulted to ensure consistency of marking.

Assessment Objective		**Command Word**	
Strand	**Element**	**Describe**	**Explain**
AO1*		An answer that combines the marking points to provide a logical description	An explanation that links identification of a point with reasoning/justification(s) as required
AO2		An answer that combines the marking points to provide a logical description, showing application of knowledge and understanding	An explanation that links identification of a point (by applying knowledge) with reasoning/justification (application of understanding)
AO3	1a and 1b	An answer that combines points of interpretation/evaluation to provide a logical description	
AO3	2a and 2b		An explanation that combines identification via a judgment to reach a conclusion via justification/reasoning
AO3	3a	An answer that combines the marking points to provide a logical description of the plan/method/experiment	
AO3	3b		An explanation that combines identifying an improvement of the experimental procedure with a linked justification/reasoning

*there will be situations where an AO1 question will include elements of recall of knowledge directly from the specification (up to a maximum of 15%). These will be identified by an asterisk in the mark scheme.

Paper B2H 1812 SAMS Higher Biology

Question number	Answer	Mark
1(a)(i)	 Correct shape pyramid (1) Correct labels (1)	**(2)**

Question number	Answer	Additional guidance	Mark
1(a)(ii)	2000 ÷ 100 = 20 (1) 20 x 9 = 180 (g)	accept alternative methods of calculating percentage award full marks for correct answer with no working	**(2)**

Question number	Answer	Additional guidance	Mark
1(a)(iii)	Any **one** from: • released during egestion/excretion (1) • ladybird is not able to digest all of the aphid (1) • used by the ladybird in respiration/movement (1)	accept other correct reasons	**(1)**

Question number	Answer	Additional guidance	Mark
1(b)	Two of the following: • ladybirds will eat the aphids (1) • and so prevent them feeding on the rose bushes/producing more roses/producing healthier plants(1)		**(2)**

Total mark for question 1 – 7 marks

Question number	Answer	Additional guidance	Mark
2(a)	glucose + oxygen	accept oxygen + glucose do not accept symbols	**(1)**

Question number	Answer	Additional guidance	Mark
2(b)(i)	Any one from: • the light meter is not in the same position as the test tube (1) • some light is reflected by the glass/test tube (1) • some light will be absorbed by the glass / test tube/water (1)	accept other relevant answers	**(1)**

Question number	Answer	Additional guidance	Mark
2(b)(ii)	Any two from: • place a heat shield between light and test tube (1) • use water bath (1) • pond weed weighted down (1) • collect gas in syringe to measure the volume (1)	accept other relevant answers	**(2)**

Question number	Answer	Additional guidance	Mark
2(c) (i)	Substitution 12÷0.05 (1) Evaluation X240	award full marks for correct answer without working	**(2)**

Question number	Answer	Additional guidance	Mark
2(c)(ii)	An answer that combines the following points to provide a logical description of the plan: • cut a thin section of the stem (1) • put onto slide and add stain / named stain (1) • put cover slip on (1)	ignore references to microscope use.	**(3)**

Total mark for question 2 – 9 marks

Question number	Answer	Mark
3(a)(i)	C. oestrogen ovary (1)	**(1)**

	Answer	Mark
3(a)(ii)	Day 14/15/16 (1)	**(1)**

Question number	Answer	Additional guidance	Mark
3(b)(i)	An answer including the following: • stop sperm reaching the egg (1) • therefore no fertilisation (1)		**(2)**

Question number	Answer	Additional guidance	Mark
3(b)(ii)	An answer including the following: • none of the methods are 100% effective (1) • no difference in success rate for implant and vasectomy (1) • diaphragm, vaginal ring and condom have a lower success rate during typical use (1)	accept reasons for lower typical use success rate (1)	**(3)**

Question number	Answer	Additional guidance	Mark
3(c)	An answer including the following: • FSH causes eggs to develop in the follicle (1) • The more eggs that develop the more likely a woman is to conceive (1)		**(2)**

Total mark for question 3 – 9 marks

Question number	Answer	Additional guidance	Mark
4 (a)	store urine (1)	accept other functions of the bladder	**(1)**

Question number	Answer	Mark
4(b)	An explanation including **two** of the following: • (water moves from the nephron into blood) by osmosis (1) • because the concentration of water / water potential is higher in the nephron than in the blood (1) • across a partially permeable membrane (1)	**(2)**

Question number	Answer	Additional guidance	Mark
4(c)	An explanation including: • the concentration on side A will decrease (1) • AND **two** from: • because water moves from side B to side A (1) • by osmosis (1) OR • because urea moves from side A to side B (1) • by diffusion (1)		**(3)**

Question number	Answer	Additional guidance	Mark
4(d)	A description including **two** of the following: • as the concentration increases the rate increases (1) • doubling the concentration doubles the rate/directly proportional up until 4 (mmol dm^{-3}) (1) • up to a maximum of 300 (1)		**(2)**

Question number	Answer	Mark
4(e)	**Any 3 from** • any operation carries risks (1) • transplanted kidney only lasts 8 – 9 years (on average) (1) • must take immune suppressant drugs (1) • will have to wait for a suitable donor (1)	**(3)**

Total for question 4 – 11 marks

Question number	Answer	Additional guidance	Mark
5(a)(i)	An answer that combines the following points to provide a plan/method: • use a quadrat (1) • count the number of daisy plants in each quadrat (1) • repeat at regular distances from the trees (1)	accept other relevant methods	**(3)**

Question number	Answer	Additional guidance	Mark
5(a)(ii)	belt transect	accept systematic sampling	**(1)**

Question number	Answer	Additional guidance	Mark
5(a)(iii)	An answer that included two of the following to provide a logical description:: • use a light/lux meter to measure light levels (1) • use a pH probe to measure pH levels in the soil (1) • use a thermometer to measure the temperature of the air/soil(1) • measure water content of soil using a moisture probe (1)	accept other relevant answers	**(2)**

Question number	Answer	Additional guidance	Mark
5(b)(i)	An answer that includes the following: • as the distance from the trees increases the number of daisy plants in the sample increases (1) • the number of daisy plants in each sample does not go up linearly from stated distance (2-4) (1) • accept relevant readings from the graph (1)		**(2)**

Question number	Answer	Additional guidance	Mark
5(b)(ii)	An explanation including the following: • close to the trees there are fewer daisy plants because the daisy plants are in competition with the trees (1) • for {water / sunlight / mineral ions}		**(2)**

Total for question 5 – 10 marks

Question number	Answer	Additional guidance	Mark
6(a)(i)	[ ] D phagocyte erythrocyte		**(1)**

Question number	Answer	Additional guidance	Mark
6(a)(ii)	[ ] A engulf pathogens		**(1)**

Question number	Answer	Additional guidance	Mark
6(a)(iii)	Substitution 8 ÷ 900 (1) Evaluation 0.008889 mm (1) Standard form 8.9×10^{-3}(mm)	accept alternative methods of calculation award full marks for correct answer without working	**(3)**

Question number	Answer	Additional guidance	Mark
6(b)	An explanation linking two of the following linked statements: • thin cell walls / small gaps in capillary wall (1) • to minimise diffusion distance / to allow for diffusion(1) • large surface area (1) • to maximise diffusion (1) • narrow lumen (1) • so blood cells travel in single file to maximise gas exchange (1)		**(4)**

Question number	Answer	Additional guidance	Mark
6(c)	(blood is) oxygenated (1)	accept alternative answers	**(1)**

Total for question 6 – 10 marks

Question number	Answer	Additional guidance	Mark
7(a)(i)	An answer linking the following: • temperature increases linearly from 18 degrees to 55 degrees in the first 4 weeks (1) • then decreases to 18 degrees at 16 weeks (1)	Accept reading from either X or Y axis for either point.	**(2)**

Question number	Answer	Additional guidance	Mark
7(a)(ii)	An explanation linking the following: • (the temperature increased during this time) due to the effect of microorganisms (1) • which respire (when they break down the plant matter) (1) • releasing heat energy (1)		**(3)**

Question number	Answer	Additional guidance	Mark
7(a)(iii)	calculate number of days 16 x 7 = 112 (1) calculate rate 50 ÷ 112 = 0.45 (litres per day)	accept alternative methods of calculation award full marks for correct answer without working	**(2)**

Question number	Answer	Additional guidance	Mark
7(b)	An explanation linking the following: • fertilisers contain nitrates (1) • which are needed to make proteins (1) • for plant growth (1)	accept other mineral ions and how they are used	**(3)**

Total for question 7 – 10 marks

Question number	Answer	Additional guidance	Mark
8(a)(i)	Any two from: • same gender (1) • same age (1) • same body mass (1) • same height (1)	accept other valid variables	**(2)**

Question number	Answer	Additional guidance	Mark
8(a)(ii)	An explanation linking the following: • breathing rate increased to provide more oxygen (1) • for respiration to release energy (1) • to the working muscles / for muscle contraction (1)	Accept breathing rate to remove carbon dioxide produced during respiration (2)	**(3)**

Question number	Answer	Additional guidance	Mark
8(b)	An explanation linking the following: • there was not enough oxygen getting to the muscle tissue to increase aerobic respiration (1) • the people started to respire anaerobically (1) • which produced lactic acid (1)		**(3)**

Question number	Answer	Additional guidance	Mark
8(c)	converting equation: 5 500 ÷ 111 (1) calculation 49.55 /49.6 (1) units ml per beat (1)	award full marks for correct answer without working	**(3)**

Total for question 8 – 11 marks

Question number	Answer	Additional guidance	Mark
9(a)(i)	[ ] B positive gravitropism		(1)

Question number	Answer	Additional guidance	Mark
9(a)(ii)	An answer including two of the following: • the roots of both seedlings B and C grow downwards (1) • seedling B starts to grow upwards (1) • seedling B has grown faster/longer than seedling C		(2)

Question number	Answer	Additional guidance	Mark
9(a)(iii)	An explanation linking the following: • the cells in the root grow so the root grew horizontally (1) • then auxins inhibited cell elongation on the underside of the root (1) • cells on the upper side of the root elongated (and caused the root to grow vertically downwards) (1)		(3)

Question number	Indicative content	Mark
*9(b)	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material that is indicated as relevant. Additional content included in the response must be scientific and relevant. **AO2 (6 marks)** • has a waxy cuticle • to prevent water loss • has upper/lower epidermis • to allow light to pass through • has a palisade layer • with chloroplasts for photosynthesis • has a mesophyll layer • with air spaces for gas exchange • has stomata (on the lower surface) • for gas exchange • has xylem tissue • for the movement of water/minerals around the plant • has phloem tissue • for the movement of sucrose around the plant	(6)

Level	Mark	Descriptor
	0	• No awardable content
Level 1	1-2	• The description attempts to link and apply knowledge and understanding of scientific ideas, flawed or simplistic connections made between elements in the context of the question. • Lines of reasoning are unsupported or unclear. (AO2)
Level 2	3-4	• The description is mostly supported through linkage and application of knowledge and understanding of scientific ideas, some logical connections made between elements in the context of the question. • Lines of reasoning mostly supported through the application of relevant evidence. (AO2)
Level 3	5-6	• The description is supported throughout by linkage and application of knowledge and understanding of scientific ideas, logical connections made between elements in the context of the question.

		• Lines of reasoning are supported by sustained application of relevant evidence. (AO2)

level	descriptor
1	• A description linking at least two leaf structures to their function or a list of at least four leaf structures • The explanation must be ordered so correct explanation with correct adaptation
2	• A description linking at least four leaf structures to their function • Each adaptation should link to the correct explanation for 4 marks
3	• A description linking at least six leaf structures to their function • Each of the adaptations should link to the correct explanation

Total for question 9 – 12 marks

Question number	Answer	Additional guidance	Mark
10(a)	[ ] C endocrine system		**(1)**

Question number	Indicative content	Mark
***10(b)**	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material that is indicated as relevant. Additional content included in the response must be scientific and relevant. **AO1 (6 marks)** • prepare the body to fight or flight • diverts blood from digestive system • carried in the blood stream to the heart • to increase heart rate • increased blood pressure • carried in bloodstream to liver • so more glycogen converted to glucose • increased blood glucose levels • carried in bloodstream to muscles • increased volume of blood pumped to muscles • increased respiration	**(6)**

Level	Mark	Descriptor
	0	• No rewardable material.
Level 1	1-2	• Demonstrates elements of biological understanding, some of which is inaccurate. Understanding of scientific ideas lacks detail. (AO1) • Presents an explanation with some structure and coherence. (AO1)
Level 2	3-4	• Demonstrates biological understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas is not fully detailed and/or developed. (AO1) • Presents an explanation that has a structure which is mostly clear, coherent and logical. (AO1)

Level 3	5-6	• Demonstrates accurate and relevant biological understanding throughout. Understanding of the scientific ideas is detailed and fully developed. (AO1) • Presents an explanation that has a well-developed structure which is clear, coherent and logical. (AO1)

Level	Descriptor
1	• An explanation of one effect of adrenalin on the body Or reference to the effect of adrenalin as fight or flight and diversion of blood from digestive system • The correct explanation for the effect must be given
2	• An explanation of at least two effects of adrenalin on the body or the explanation followed through e.g. carried to heart to increase heart rate and blood pressure • Answer should be logically laid out with the correct effect linked to the correct outcome.
3	• An explanation of at least three effects of adrenalin on the body. • Each of the effects should be logically written linking the effect of adrenalin to the correct organ and outcome

Question number	Answer	Additional guidance	Mark
10(c)	An explanation linking all of the following: • glucagon is a hormone released from the pancreas when blood glucose levels are low (1) • causing the conversion of glycogen in the liver (1) • into glucose (1) • which raises blood glucose levels (1)		**(4)**

Total for question 10 – 11 marks