



Mark Scheme (Results)

Summer 2025

Pearson Edexcel GCSE
In Combined Science Biology
(1SC0) Paper 2BF

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General Marking Guidance

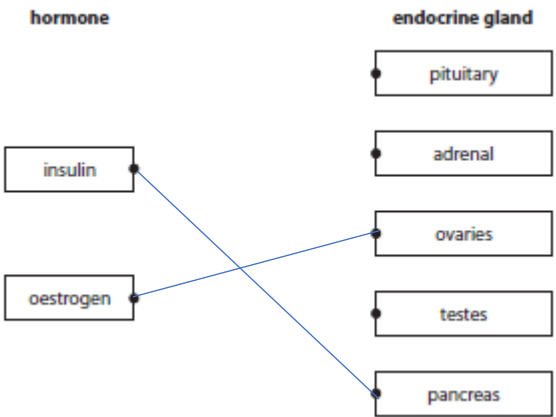
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should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

Combined Science – Biology 1SC0_2BF

Question number	Answer	Mark
1(a)	 <p>Do not award mark if two lines are drawn from either hormone box.</p>	(2)

Question number	Answer	Additional guidance	Mark
1(b)(i)	7.6 (mmol per dm ³)	accept a range of 7.2 - 8.0	(1)

Question number	Answer	Additional guidance	Mark
1(b)(ii)	<p>A description including two from:</p> <ul style="list-style-type: none"> decreases (1) and then increases (1) 		(2)

Question number	Answer	Additional guidance	Mark
1(c)	<p>A description including two from:</p> <ul style="list-style-type: none"> • control diet (1) • exercise (1) • take medication (1) 	<p>accept eat fewer carbohydrates / sugars / glucose / eat a low fat diet</p> <p>ignore healthy diet / balanced diet / go on a diet</p> <p>accept lose weight against MP1 or 2</p> <p>accept use metformin</p> <p>accept use insulin</p> <p>accept take named medication</p>	(2)

Total for Question 1 = 7 marks

Question number	Answer	Mark
2(a)	(water) + carbon dioxide (1) $\longrightarrow$ (glucose) + oxygen (1)	(2)

Question number	Answer	Additional guidance	Mark
2(b)(i)	light doesn't (usually) reach the roots / photosynthesis needs light / root cells do not have chloroplasts (1)		(1)

Question number	Answer	Mark
2(b)(ii)	<p>The only correct answer is B sucrose</p> <p>A is incorrect because starch is not transported in the phloem</p> <p>C is incorrect because urea is not transported in the phloem</p> <p>D is incorrect because plasma is not transported in the phloem</p>	(1)

Question number	Answer	Additional guidance	Mark
2(c)	<p>A description linking two from:</p> <ul style="list-style-type: none"> • found in chloroplasts (1) • which absorbs light (1) • for photosynthesis (1) 		(2)

Question number	Answer	Additional guidance	Mark
2(d)	<p>Two from:</p> <p>(the oil burning heater)</p> <ul style="list-style-type: none"> • produces carbon dioxide (1) • increases temperature (1) • produces water (vapour) (1) 	<p>accept increases humidity</p> <p>accept produces light (1)</p>	(2)

Total for Question 2 = 8 marks

Question number	Answer	Mark
3(a)	<ul style="list-style-type: none"> proteins (1) decomposers (1) <p>Answers must be in the correct order</p>	(2)

Question number	Answer	Additional guidance	Mark
3(b)(i)	<p>Substitution: $180 \div 100 \times 55$ (1)</p> <p>Evaluation: 99 (million tonnes)</p>	<p>award full marks for the correct answer with no working</p> <p>accept other ways of working</p>	(2)

Question number	Answer	Additional guidance	Mark
3(b)(ii)	eutrophication		(1)

Question number	Answer	Additional guidance	Mark
3(c)(i)	<p>both columns plotted</p> <p>algae L = 10 (1) algae M = 6 (1)</p>	<p>tolerance = $\frac{1}{2}$ small square</p>	(2)

Question number	Answer	Additional guidance	Mark
3(c)(ii)	<ul style="list-style-type: none"> as the nitrate concentration increases the number of algae increases (1) as the nitrate concentration increases the number of species / types of algae increases (1) 	ORA accept other correct conclusion about individual species as shown in the table and graph (1)	(2)

Question number	Answer	Mark
3(c)(iii)	<p>The only correct answer is:</p> <p>C plants die as they do not receive enough light</p> <p>A is incorrect because a build-up of algae on the surface of the lake does not make the plants growing at the bottom of the lake warmer.</p> <p>B is incorrect because there is less light getting to the plants on the bottom of the lake so these plants photosynthesise less</p> <p>D is incorrect because the algae have no effect on the plants ability to absorb water</p>	(1)

Total for Question 3 = 10 marks

Question number	Answer	Additional guidance	Mark
4(a)(i)	measurements: (T-U =) 5 mm (1)	allow a thickness from 4 to 6mm	(1)

Question number	Answer	Additional guidance	Mark
4(a)(ii)	<p>A description including two from:</p> <ul style="list-style-type: none"> • (right) ventricle / heart contracts (1) • (blood leaves through the) pulmonary artery (1) • to the lungs (1) • absorbs oxygen (by diffusion) (1) 	accept pushes / pumps for contracts	(2)

Question number	Answer	Mark
4(a)(iii)	<p>The only correct answer is</p> <p>D vena cava</p> <p>A is incorrect because the aorta does not carry deoxygenated blood</p> <p>B is incorrect because pulmonary artery carries blood away from the heart</p> <p>C is incorrect because the pulmonary vein does not carry deoxygenated blood</p>	(1)

Question number	Answer	Mark
4(b)	two / 2	(1)

Question number	Answer	Additional guidance	Mark
4(c)	A description including three from: <ul style="list-style-type: none"> • blood is put under pressure (1) • (blood flows) through the valve (1) • into the aorta (1) • to the body (1) 	accept blood is pumped / pushed	(3)

Question number	Answer	Mark
4(d)(i)	vein	(1)

Question number	Answer	Additional guidance	Mark
4(d)(ii)	A description including 2 from: <ul style="list-style-type: none"> • large surface area (to volume ratio) (1) • (very) thin wall (1) • has {gaps / holes} in (wall) / it is permeable (1) • (the structure) increases the rate of diffusion / causes faster diffusion / shorter diffusion pathway (1) 	accept (wall) is one cell thick accept it is leaky accept shorter diffusion distance	(2)

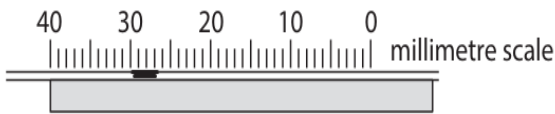
Total for Question 4 = 11 marks

Question number	Answer	Additional guidance	Mark
5(a)	<p>An explanation linking two from:</p> <ul style="list-style-type: none"> • blood pumped faster (around the body) (1) • because more {oxygen / glucose} is needed (by the muscles) (1) • because more {respiration / energy is needed} (when running) (1) 	<p>accept remove more carbon dioxide</p> <p>more only has to be written once for more oxygen / more glucose / more respiration</p>	(2)

Question number	Answer	Additional guidance	Mark
5(b)	<p>A description including:</p> <ul style="list-style-type: none"> • (pathogens) get stuck in mucus (1) • cilia {move / waft} the {pathogens / mucus} (1) • to the throat / up the {trachea / bronchiole} / to be swallowed (1) 	<p>accept micro-organisms for pathogens</p> <p>accept hairs for cilia</p>	(2)

Question number	Answer	Additional guidance	Mark
5(c)	<p>An explanation linking two from:</p> <ul style="list-style-type: none"> glucose and oxygen (1) (to form) carbon dioxide and water (1) in an exothermic reaction (1) which takes place in the mitochondria (1) 	<p>accept $C_6H_{12}O_6 + O_2$</p> <p>accept $CO_2 + H_2O$</p> <p>accept correct equation for aerobic respiration for 2 marks</p>	(2)

Question number	Answer	Additional guidance	Mark
5(d) (i)	to absorb the carbon dioxide	accept CO_2	(1)

Question number	Answer	Additional guidance	Mark
5(d) (ii)			(1)

Question number	Answer	Additional guidance	Mark
5(d)(iii)	<p>An explanation linking two from:</p> <ul style="list-style-type: none"> • (the drop) would move more slowly / shorter distance (1) • as less oxygen would be used • so less respiration would occur (1) 	accept less carbon dioxide {produced / absorbed}	(2)

Question number	Answer	Mark
5(d)(iv)	repeat the investigation / calculate a mean	(1)

Total for Question 5 = 11 marks

Question number	Answer	Mark
6(a)(i)	native (species) / (species) from the country of origin	(1)

Question number	Answer	Additional guidance	Mark
6(a)(ii)	quadrat / stated size of square area	accept {belt / line} transect / a grid	(1)

Question number	Answer	Mark
6(b)(i)	increases / goes up / rises	(1)

Question number	Answer	Additional guidance	Mark
6(b)(ii)	<p>The only correct answer is B species C</p> <p>A is incorrect because species A is decreasing so will not out-compete</p> <p>C is incorrect because species D has only increased by 2 so will not out-compete B</p> <p>D is incorrect because species H is not present so will not out-compete species B</p>		(1)

Question number	Answer	Additional guidance	Mark
6(b)(iii)	<p>An explanation linking:</p> <ul style="list-style-type: none"> taller / bigger / had larger leaves / had larger roots (1) (got more) water / minerals / nutrients / light / photosynthesis (1) 	<p>ORA</p> <p>accept grows / reproduces / takes up more space / higher population</p> <p>accept named minerals</p> <p>accept disease / eaten by animals (1)</p>	(2)

Question number	Answer	Mark
6(b)(iv)	(seeds) blown in by the wind / (seeds) brought in by animals / {roots / shoots} growing under the wall	(1)

Question number	Indicative content	Mark
6(c)*	<p style="text-align: center;">AO2 / AO3</p> <p>Plan</p> <ul style="list-style-type: none"> • use a quadrat / description of quadrat • place on ground • randomly • identify plants in quadrat • count the number of each of the types of plants found in each 'quadrat' <p>Calculation</p> <ul style="list-style-type: none"> • method of scaling up to size of field • calculate a mean (per quadrat / for each species) • multiply mean by area of field / number per m² by 1000 <p>Details</p> <ul style="list-style-type: none"> • size of quadrat • how to place quadrat randomly • when to count plant as present e.g. more than half in quadrat • repeats (places a quadrat more than once) • multiply by 4 to get number per square metre if a ½ m / ¼ m² quadrat used • don't put quadrat in an area already used 	(6)

Level	Mark	Descriptor
	0	No awardable content
Level 1	1–2	<ul style="list-style-type: none"> The plan attempts to link and apply knowledge and understanding of scientific enquiry, techniques and procedures, flawed or simplistic connections made between elements in the context of the question. (AO2) Analyses the scientific information but understanding and connections are flawed. An incomplete plan that provides limited synthesis of understanding. (AO3)
Level 2	3–4	<ul style="list-style-type: none"> The plan is mostly supported through linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, some logical connections made between elements in the context of the question. (AO2) Analyses the scientific information and provides some logical connections between scientific enquiry, techniques and procedures. A partially completed plan that synthesises mostly relevant understanding, but not entirely coherently. (AO3)
Level 3	5–6	<ul style="list-style-type: none"> The plan is supported throughout by linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, logical connections made between elements in the context of the question. (AO2) Analyses the scientific information and provide logical connections between scientific concepts throughout. A well-developed plan that synthesises relevant understanding coherently. (AO3)

Level	Mark	Additional guidance	General additional guidance
	0	No rewardable material.	The level is driven by the plan. The mark within the level is determined by the calculation
Level 1	1–2	States a relevant part of a plan States relevant parts of a plan or one part of a plan with some detail	<u>Possible candidate responses</u> <ul style="list-style-type: none"> Count the plants in the field / part of the field Count the plants in the field / part of the field. Place a grid on the ground and count the plants inside.
Level 2	3–4	States aspects of a plan with some detail Includes how to calculate the number of each species in the field but omits detail	<u>Possible candidate responses</u> <ul style="list-style-type: none"> Put a ½ metre square on the ground and count how many of each plant are in the square Put a ½ metre square on the ground and count how many of each type of plant are in the square. Multiply the number of each plant by the size of the field.
Level 3	5–6	Produces a workable, detailed plan that includes placing quadrats randomly and counting the number of each species within the quadrat Calculates the number of (each species of) plant in the field e.g. multiplying the average number of each species in the quadrats / per m ² by the area of the field	<u>Possible candidate responses</u> <ul style="list-style-type: none"> Place quadrats randomly 3 times (by using random coordinates). Count the plants of each species that are inside the quadrat. Place quadrats randomly 3 times (by using random coordinates). Count the plants of each species that are inside the quadrat. Calculate the average for each species per quadrat /m². Multiply the averages per quadrat by 4 and then by the area of the field / by 1000.

Total for question 6 = 13 marks

