



GCSE MARKING SCHEME

SUMMER 2025

**GCSE
DOUBLE AWARD SCIENCE
BIOLOGY 1 - UNIT 1
3430U10-1 AND 3430UA0-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

DOUBLE AWARD SCIENCE
UNIT 1 BIOLOGY 1: FOUNDATION AND HIGHER TIER
SUMMER 2025 MARK SCHEME

GENERAL INSTRUCTIONS

Recording of marks

Examiners must mark in red ink.

One tick must equate to one mark (apart from the questions where a level of response mark scheme is applied).

Question totals should be written in the box at the end of the question.

Question totals should be entered onto the grid on the front cover and these should be added to give the script total for each candidate.

Marking rules

All work should be seen to have been marked.

Marking schemes will indicate when explicit working is deemed to be a necessary part of a correct answer.

Crossed out responses not replaced should be marked.

Credit will be given for correct and relevant alternative responses which are not recorded in the mark scheme.

Extended response question

A level of response mark scheme is used. Before applying the mark scheme please read through the whole answer from start to finish. Firstly, decide which level descriptor matches best with the candidate's response: remember that you should be considering the overall quality of the response. Then decide which mark to award within the level. Award the higher mark in the level if there is a good match with both the content statements and the communication statement. Award the middle mark in the level if most of the content statements are given and the communication statement is partially met. Award the lower mark if only the content statements are matched.

Marking abbreviations

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

cao	=	correct answer only
ecf	=	error carried forward
bod	=	benefit of doubt

Question				Marking details	Marks Available																												
					AO1	AO2	AO3	Total	Maths	Prac																							
1	(a)			B Given A D C all three correct (1)		1		1	1																								
	(b)			<table border="1"><thead><tr><th rowspan="2">Structure</th><th colspan="3">present in;</th></tr><tr><th>animal cells only</th><th>plant cells only</th><th>animal and plant cells</th></tr></thead><tbody><tr><td>A nucleus</td><td></td><td></td><td>✓</td></tr><tr><td>B mitochondria</td><td></td><td></td><td>✓</td></tr><tr><td>C vacuole</td><td></td><td>✓</td><td></td></tr><tr><td>D chloroplast</td><td></td><td>✓</td><td></td></tr></tbody></table> 1 mark for each correct row (4)	Structure	present in;			animal cells only	plant cells only	animal and plant cells	A nucleus			✓	B mitochondria			✓	C vacuole		✓		D chloroplast		✓		4					
Structure	present in;																																
	animal cells only	plant cells only	animal and plant cells																														
A nucleus			✓																														
B mitochondria			✓																														
C vacuole		✓																															
D chloroplast		✓																															
	(c)			<u>respiration</u> (1)	1																												
				Question 1 total	5	1	0	6	1	0																							

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
2	(a)			<u>vena cava</u> (1)	1			1		
	(b)			Lung(s) (1)	1			1		
	(c)			(cardiac) muscle (1)	1			1		
	(d)			3 4 1 2 6 5 1 mark for each correct (4)	4			4		
				Question 2 total	7	0	0	7	0	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
3	(a)			test tube (1) (10 cm ³ measuring) cylinder (1) either order		2		2		2
	(b)			Glucose (is present) (1)			1	1		1
	(c)	(i)		blue (1)			1	1		1
		(ii)	I	Red / orange / green / yellow (1)			1	1		1
			II	starch is {digested / broken down} to glucose (1)			1	1		1
				Question 3 total	0	2	4	6	0	6

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
4	(a)			<u>carnivores</u> (1)	1			1		
	(b)	(i)	I	Any one (x1) from {more / higher} in cormorant (eggs) (1) {Less / lower} in puffin (eggs) (1) three times higher in cormorant / ORA (1)		1		1		
			II	{Concentration / it} builds up in the food chain / bioaccumulation (1) cormorants {higher up (food chain) / owtte} / puffins {lower down (food chain) / owtte} (1)	1	1		2		
		(ii)		{DDT / lts / the} {concentration / level / amount / ppm / results / readings} (in eggs) {reduces / reference to figures} (1)		1		1		
				Question 4 total	2	3	0	5	0	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
5	(a)	(i)		Carbon dioxide (1)	1			1		
		(ii)		Any one (x1) from thin wall / (wall) one cell thick (1) {large / increase} surface area (1) moist (1) close to blood / good blood supply (1)	1			1		
	(b)	(i)		{Fewer / not many / not enough / decrease} red blood cells / comparison of % between A and B (1) Red blood cells carry oxygen (1)	1	1		2		
		(ii)		Clotting / make clots (1)	1			1		
	(c)	(i)		5:1 (2) 10:2 (1)		2		2	2	
		(ii)		<u>decrease (1)</u>		1		1		
				Question 5 total	4	4	0	8	2	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
6	(a)			450 (1)		1		1		1
	(b)	(i)	I	all five plots correct (2) 3/4 plots correct (1) Tolerance less than 1 small square		2		2	2	2
			II	accurate line (1) Tolerance less than 1 small square		1		1	1	1
		(ii)		(Peak flow) rises (with age) and then falls (1) from 35 (1)		2		2		2
		(iii)		Any one (x1) from: men greater (than women) / ORA (1) Both {goes down from / peak at / increase to} 35 (1) Greater {range / increase/ drop} in men / ORA (1)			1	1		1

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
	(c)			Indicative content: Two (A + B) from: • at rest / standing / relaxed • same time of day • {same age / both 14} • {similar / same} {size / height / bmi / owtte} • ref to {health issues / fitness / smoking} and: C. girls and boys D. <u>blow</u> (hard) into {meter / tube / mouthpiece} E. {record / owtte} (results) F. repeat G. (calculate) mean H. (display results in) {graph / bar chart / table} I. compare {peak flows / results} (for girls and boys) / or description / refer back to the teachers statement		2	4	6		6

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
				5-6 marks At least 7 points <i>There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant to the argument.</i> 3-4 marks At least 4 points <i>There is a line of reasoning which is partially coherent, supported by some evidence and with some structure. Mainly relevant information is included in the response but there may be some minor errors or the inclusion of some information not relevant to the argument.</i> 1-2 marks Any one point <i>There is a basic line of reasoning which is not coherent, supported by limited evidence and with very little structure. There may be significant errors or the inclusion of information not relevant to the argument.</i> 0 marks <i>No attempt made or no response worthy of credit.</i>						
				Question 6 total	0	8	5	13	3	13

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
7/1	(a)	(i)		18 = (3) If incorrect award 2 marks for 18.15181518... If incorrect award 1 mark for $\frac{107.4 - 90.9}{90.9} \times 100$		3		3	3	3
		(ii)	I	Any one (x1) from • {A / it} is insulated / B is not insulated (1) • tin can (in A) {traps heat / keeps heat in / keeps it warm} (1) • no tin can in B so {{no / less} heat trapped / more heat is lost} (1) • {Sweet / flame / needle} is closer in {A / tin can} so (less / no} heat is lost / ORA		1		1		1
			II	reference to constant distance of sweet below tube / likely variation in distance in B / hand {shakes / moves / owtte}		1		1		1
	(b)			fat / lipids Accept glycogen	1			1		
	(c)			Any two (x1) from Obesity <u>Type 2</u> diabetes tooth {decay / cavities / owtte}	2			2		
				Question 7/1 total	3	5	0	8	3	5

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
8/2	(a)	(i)		chlorophyll (1)	1			1		
		(ii)		carbon dioxide + water (1) glucose + oxygen (1)	2			2		
	(b)	(i)		Dark: Increased / more / stronger and Light: Decreased / less / weaker both for one mark (1)			1	1		1
		(ii)		- No photosynthesis / photosynthesis requires light (1) reject less photosynthesis - respiration is taking place (in the leaf) (1) (respiration) {produces / makes} carbon dioxide / statement linking respiration with carbon dioxide (1) Accept only respiration taking place = 2 marks Accept only respiration taking place producing carbon dioxide = 3 marks		1	2	3		3
				Question 8/2 total	3	1	3	7	0	4

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
3	(a)			Protein (1) {Speeds up / catalyses} a reaction / catalyst(1) Or Biological catalyst = 2 marks	2			2		
	(b)	(i)		IV Temperature DV {Number / amount} of bubbles	2			2		2
		(ii)		Any one (x1) from {assess / check} repeatability / owtte (1) - increase accuracy <u>of mean</u> (1) - identify anomalies / owtte (1) - increase confidence in results (1)	1			1		1
	(c)			Any three (x1) from - As temperature increases (mean number of) {bubbles increases / more bubbles} (1) - Increased kinetic energy of {molecules / enzyme / substrate / glucose / yeast} / {molecules / enzyme / substrate / glucose / yeast} move {more / faster / increase in speed} (1) - More successful collisions (1) - More enzyme substrate complexes (1)		2	1	3		3

Question				Marking details	Marks Available																			
					AO1	AO2	AO3	Total	Maths	Prac														
	(d)			Any suitable inaccuracy (1) + linked improvement (1) <table><tr><th>Inaccuracy</th><th>Improvement</th></tr><tr><td>Bubbles {different sizes / too small to see / bubbles produced too quickly}</td><td>Measure volume of gas produced</td></tr><tr><td>pH may change</td><td>Use a buffer (to keep pH constant)</td></tr><tr><td>Water (in beaker) {cools / does not stay constant / owtte} (during experiment)</td><td>Carry out in a {<u>thermostatic / electric / electronic / temperature controlled</u>} water bath / heat the water back up (if necessary) / insulate the water bath</td></tr><tr><td>Glucose used up (by yeast)</td><td>(Make up)fresh yeast (suspension) with glucose each time</td></tr><tr><td>Bubbles produced too quickly to count / owtte</td><td>Use a video camera (and watch it back) / owtte</td></tr><tr><td>gas {leaking / lost} between the bung and the tube</td><td>{seal / use a sealant on} the connections</td></tr></table>	Inaccuracy	Improvement	Bubbles {different sizes / too small to see / bubbles produced too quickly}	Measure volume of gas produced	pH may change	Use a buffer (to keep pH constant)	Water (in beaker) {cools / does not stay constant / owtte} (during experiment)	Carry out in a { <u>thermostatic / electric / electronic / temperature controlled</u> } water bath / heat the water back up (if necessary) / insulate the water bath	Glucose used up (by yeast)	(Make up)fresh yeast (suspension) with glucose each time	Bubbles produced too quickly to count / owtte	Use a video camera (and watch it back) / owtte	gas {leaking / lost} between the bung and the tube	{seal / use a sealant on} the connections			2	2		2
Inaccuracy	Improvement																							
Bubbles {different sizes / too small to see / bubbles produced too quickly}	Measure volume of gas produced																							
pH may change	Use a buffer (to keep pH constant)																							
Water (in beaker) {cools / does not stay constant / owtte} (during experiment)	Carry out in a { <u>thermostatic / electric / electronic / temperature controlled</u> } water bath / heat the water back up (if necessary) / insulate the water bath																							
Glucose used up (by yeast)	(Make up)fresh yeast (suspension) with glucose each time																							
Bubbles produced too quickly to count / owtte	Use a video camera (and watch it back) / owtte																							
gas {leaking / lost} between the bung and the tube	{seal / use a sealant on} the connections																							
	(e)			Line decreasing to {80°C / 0 number of bubbles before 80°C} (1) {Enzymes / active site} {changes shape / denatures / owtte} (at high temperatures) (1) MP 2 can only be awarded if line in MP1 is decreasing		2		2	1	2														
				Total for Question 3	5	4	3	12	1	10														

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
4	(a)	(i)		Structure A - <u>right</u> atrium (1) Structure B – <u>left</u> ventricle (1) Organ X – lungs	1 1	1		3		
		(ii)	I	G placed on hepatic portal vein or hepatic vein i.e. after small intestine before the liver / after liver before vena cava (1)			1	1		
			II	{absorption / or description of} (of digested food) takes place in the small intestine (1)		1		1		
		(iii)		One {system / circulation} for the {lungs / pulmonary} (1) One {system / circulation} for the {(other organs of the) body / systemic} (1) Or Blood passes through the heart twice (1) During each (full) {circuit / cycle / circulation} (of the body) (1) Linked to first mark point Accept full description of circuit for 2 marks	2			2		
	(b)	(i)		Plasma	1			1		
		(ii)		Any two (x1) from: {Transport / carry} carbon dioxide (1) {Transport / carry} {soluble food / or examples / minerals} (1) {Transport / carry} urea (1) {Transport / carry} {hormones / antibodies / enzymes} (1) {Distribution / transport / } of heat (1)	2			2		

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
		(iii)		7.2×10^9 (3 marks) Award two marks for $7200000000 / 7.2 \text{ billion}$ 72×10^8 Award one mark for $2000000 \times 60 \times 60$ 2000000×3600		3		3	3	
		(iv)		Any three (x1) from: • Red blood cells carry oxygen (1) • So more oxygen (available) (1) • More <u>aerobic</u> respiration / {less / no} <u>anaerobic</u> respiration / respire aerobically for longer (1) • More ATP produced / more energy released (1) • {Less / no} lactic acid produced (1) • {Less / no} oxygen debt (1)		3		3		
				Total for Question 4	7	8	1	16	3	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
5	(a)		I	(To be able to compare as) they were not all the same start {mass } Reject reference to accuracy		1		1		
			II	To remove {excess / surface} {water / (salt) solution} / (to measure mass) not {excess / surface} {(salt) solution / water}		1		1		
	(b)			Indicative content A. Reference to {selectively / partially / semi} permeable membrane B. Osmosis (in correct context of water movement) C. Movement of <u>water</u> {from a high water concentration to a low water concentration / from where it is in a high concentration to where it is in low concentration/ from weak solution to strong solution / down a concentration gradient} <u>0.0 (mol/dm³)</u> D. {Percentage (change in) / Mass / it} (of potato) increased E. Water{ moved / taken} <u>in</u> / water absorbed <u>0.35 (mol/dm³)</u> F. No {Percentage / mass} change / mass change is zero G. Water <u>in</u> = water <u>out</u> / no net movement of water / as water concentration outside cylinder = water concentration inside / correct ref to equilibrium <u>0.7 (mol/dm³)</u> H. {Percentage (change in) / mass/ it} (of potato) decreased I. Water moved <u>out</u>	2	4		6		6

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
				5-6 marks At least 7 points from indicative content <i>There is a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</i> 3-4 marks At least 4 points from indicative content <i>There is a line of reasoning which is partially coherent, largely relevant, supported by some evidence and with some structure. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</i> 1-2 marks At least 1 point from indicative content <i>There is a basic line of reasoning which is not coherent, largely irrelevant, supported by limited evidence and with very little structure. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</i> 0 marks <i>No attempt made or no response worthy of credit.</i>						
				Total for Question 5	2	6	0	8	0	8

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
6	(a)			{Larger / increased} <u>surface area</u> / ORA (1) {more / increased} {(air) pollution / sulfur dioxide / ammonia / nitrogen dioxide / carbon monoxide / carbon dioxide / pollutant (molecules)} {absorbed / taken in / diffused in} (1)			2	2		2
	(b)	(i)		polluted			1	1	1	1
		(ii)		{Sites / trees} nearest {manure / (crop) fields} {more NH ₃ / more polluted / higher nitrogen pollution level / lower LIS} / ORA			1	1		1
		(iii)		(Sample) {more / other} {sites / trees / areas in the park}			1	1		1
	(c)			Any four (x1) from: - Algal bloom / overgrowth of plants / or description of (1) - Blocks light so no photosynthesis (1) - Plants die (1) {Bacteria / fungi / microbes / micro-organisms} {decompose / decay / break down} (dead) plants / - decomposers {decay / act on / break down} (dead) plants (1) (Decomposers) use up oxygen in respiration (so fish die) (1)	4			4		
				Total for Question 6	4	0	5	9	1	5

FOUNDATION TIER

SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

QUESTION	AO1	AO2	AO3	TOTAL MARK	MATHS	PRAC
1	5	1	0	6	1	0
2	7	0	0	7	0	0
3	0	2	4	6	0	6
4	2	3	0	5	0	0
5	4	4	0	8	2	0
6	0	8	5	13	3	13
7	3	5	0	8	3	5
8	3	1	3	7	0	4
TOTAL	24	24	12	60	9	28

HIGHER TIER

SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

QUESTION	AO1	AO2	AO3	TOTAL MARK	MATHS	PRAC
1	3	5	0	8	3	3
2	3	1	3	7	0	4
3	5	4	3	12	1	10
4	7	8	1	16	3	0
5	2	6	0	8	0	8
6	4	0	5	9	1	5
TOTAL	24	24	12	60	8	30