Rewarding Learning

General Certificate of Secondary Education
2024–2025

Double Award Science
Biology

Unit B1

Foundation Tier

[GDW11]

WEDNESDAY 26 FEBRUARY 2025, MORNING

MARK SCHEME

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCSE Double Award Science.

Candidates must:

AO1 Demonstrate knowledge and understanding of:
- scientific ideas; and
- scientific techniques and procedures;

AO2 Apply knowledge and understanding of and develop skills in:
- scientific ideas; and
- scientific enquiry, techniques and procedures; and

AO3 Analyse scientific information and ideas to:
- interpret and evaluate;
- make judgements and draw conclusions; and
- develop and improve experimental procedures.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. The exception to this for GCSE Double Award Science is when examiners are marking complex calculations when the Examiners are briefed to mark by error or omission. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking Calculations

In marking answers involving calculations, examiners should apply the 'carry error through' rule so that candidates are not penalised more than once for a computational error. To avoid a candidate being penalised, marks can be awarded where correct conclusions or inferences are made from their incorrect calculations.

Types of mark schemes
Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response
In deciding which level of response to award, examiners should look for the number of indicative content points in candidate responses to ensure that the answer has been written to coincide with the question. In deciding which mark within a particular level to award to any response, quality of communication will be assessed and examiners are expected to use their professional judgement.

The following guidance is provided to assist examiners.

- ***Threshold performance:*** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.

- ***High performance:*** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication
Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of bands of response. The description for each band of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within bands of response as follows:

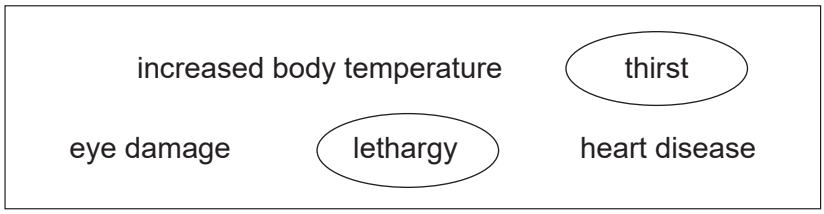
Band A: Quality of written communication is excellent.
Band B: Quality of written communication is good.
Band C: Quality of written communication is basic.
Band D: Response not worthy of credit.

In interpreting these band descriptions, examiners should refer to the more detailed guidance provided below:

Band A (Excellent): Excellent reference to scientific terminology. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

Band B (Good): Good reference to scientific terminology. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

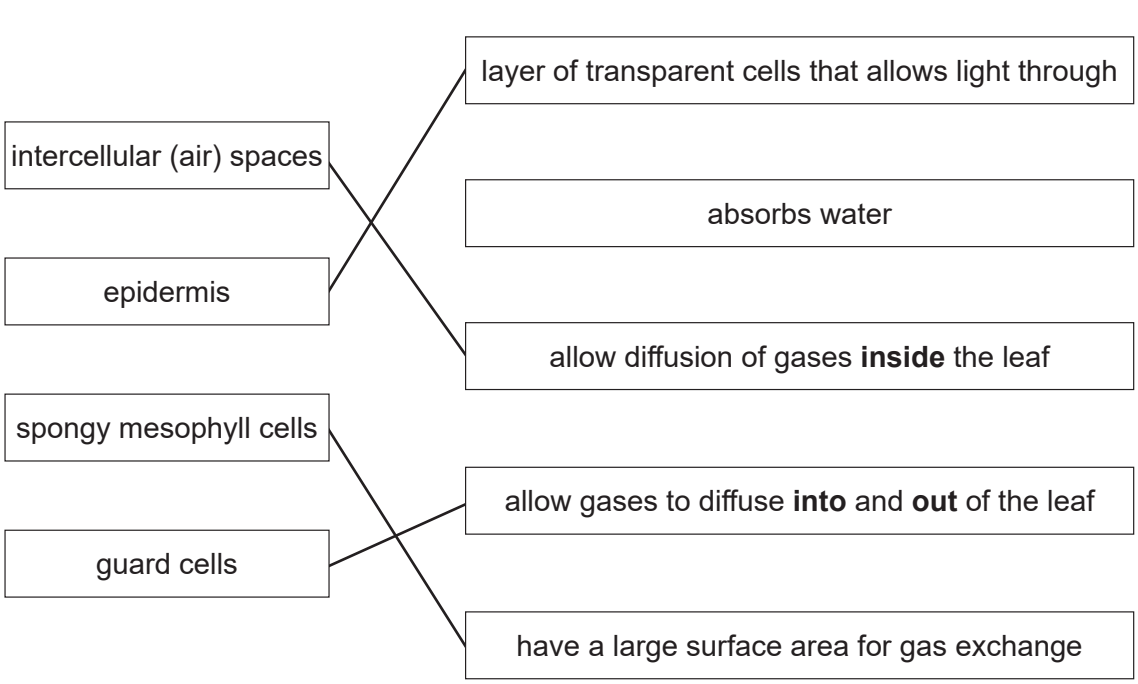
Band C (Basic): Basic reference to scientific terminology. The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

				AVAILABLE MARKS
1	**(a)**	A; D	[2]	
	(b)	Any **two** from: chloroplast; vacuole; nucleus; **cellulose** (cell) wall	[2]	4
2		D; A; C; B	[4]	4
3	**(a)**	insulin	[1]	
	(b)		[2]	
	(c)	<table><tr><th>Type of diabetes</th><th colspan="2">Letters</th><th></th></tr><tr><td>Type 1</td><td>A</td><td>D</td><td>can be in either order</td></tr><tr><td>Type 2</td><td>B</td><td>C</td><td>can be in either order</td></tr></table> [1] mark for each correct row	[2]	
	(d) **(i)**	67.60 – 59.70; 7.9	[2]	
		(ii) Less	[1]	8

AVAILABLE MARKS

4 **(a)** (waxy) cuticle [1]

(b) Do not allow two lines from one box on LHS



[4]

(c) Any **two** from:
tightly packed cells;
cells contain **many** chloroplasts;
cells near upper surface;
cells end on to upper surface/cells vertically arranged;
2 layers of palisade cells [2] 7

5 **(a)** **(i)** straight line continued drawn with the same gradient until it meets the walking line [1]

(ii) 17 [1]

(b) **more** oxygen;
for respiration/energy [2]

(c) increased depth of breathing [1]

(d)

Expected result	True	False
the fitter student had a higher breathing rate when resting		✓
the fitter student had a lower maximum breathing rate	✓	
the fitter student's breathing rate would return to resting rate faster	✓	

all three correct for [2] marks;
1 or 2 correct for [1] mark [2] 7

AVAILABLE MARKS

6 **(a)**

Organism	Producer	Primary consumer	Secondary consumer	Tertiary consumer
Grévy's zebra		✓		
panther			✓	
hyena			✓	✓
grass	✓			

one mark for each tick in the correct position as long as not extra ticks in the row [5]

(b) Any **three** from:
less/reduced/decreased/no grass/food/energy/eat for zebra/wildebeest/
more competition between the zebra and the wildebeest;
fewer/less/reduced (numbers of population) of zebra/wildebeest;
less or no zebra/wildebeest/food/energy for panthers;
hyenas or lions eat more panthers [3]

(c) 15 156 × 80/100;
12 124.8;
15 156 – 12 124.8 = 3031.02;
3031;
Correct answer worth 4 marks. [4] 12

					AVAILABLE MARKS
7	(a)	(i)	**A** cortex	[1]	
		(ii)	**B** renal artery	[1]	

(b) Indicative content

(gained)

1. food/eating/ingestion
2. drink
3. respiration

(lost)

4. breathing <u>out</u>/exhaling moisture
5. urine/excretion
6. (evaporation of) sweat/perspiration
7. faeces

Band	Response	Mark
A	Candidates use appropriate terms throughout to give **at least five** points from the indicative content. They use good spelling, punctuation and grammar skills. Form and style are of a high standard.	[5]–[6]
B	Candidates use appropriate terms throughout to give **at least three** points from the indicative content. They use satisfactory spelling, punctuation and grammar. Form and style are of a satisfactory standard.	[3]–[4]
C	Candidates use appropriate terms throughout to give **at least one** point from the indicative content. They use limited spelling, punctuation and grammar and have made little use of specialist terms.	[1]–[2]
D	Response not worthy of credit.	[0]

[6] 8

8 **(a)** bacteria; fungi/mould (either order) [2]

(b) **(i)**

Statement	True	False	Cannot tell
bag **B** had the greatest mass of leaves decomposed		✓	
bag **A** had the fastest rate of decomposition	✓		
the same rate of decomposition would occur in a **different soil**			✓
the rate of decomposition would have been faster if a **different type** of leaf had been used			✓

one mark for each tick in the correct row [4]

(ii) bag **C**;
fewest bacteria/fungi/microorganisms could get into the bag
or slowest rate of decomposition/greatest percentage of mass remaining [2]

(c) **(i)** October and December [1]

(ii) low temperature/cold temperature/too cold/(reduced water availability)
as water is frozen/reduced enzyme activity/soil waterlogged [1]

Total

AVAILABLE MARKS

10

60