Rewarding Learning

General Certificate of Secondary Education
2024–2025

Double Award Science
Biology

Unit B1

Foundation Tier

[GDW11]

TUESDAY 13 MAY 2025, AFTERNOON

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.

Where one response is required to gain a mark, candidates will not gain credit if a correct response is given alongside one or more incorrect responses.
This is referred to as listing.

AVAILABLE MARKS

1 **(a)** **(i)** **A** cell wall;
B cell membrane;
C cytoplasm; [3]

(ii) (nucleus) controls the cells' reaction/contains DNA/contains genes/contains chromosomes/contains genetic information;
(chloroplast) traps light/photosynthesis;
(vacuole) contains cell sap/maintains cell shape/structure/support; [3]

(b) Any **two** from:
cell wall/chloroplasts/(large/permanent) vacuole; [2] 8

2 **(a)** **(i)** combustion; [1]

(ii) (respiration by) plants; [1]

(b)

Process(es) that **add** carbon dioxide to the atmosphere	Process(es) that **remove** carbon dioxide from the atmosphere
respiration (by named organism/plant/animal/decomposer) combustion	photosynthesis

left hand side
[1] mark for respiration
[1] mark for combustion

right hand side
[1] mark for photosynthesis

[3] 5

3

Adaptation	Explanation
moist alveoli	short diffusion distance
many alveoli	allow gases to **dissolve**
permeable walls of alveoli	large surface area
good blood supply to alveoli	allow gases to **diffuse through**
thin walls of alveoli	maintain the diffusion gradient

5 or 4 correct for [4] marks
3 correct for [3] marks
2 correct for [2] marks
1 correct for [1] mark [4] 4

4 **(a)** **(i)** phototropism; [1]

(ii) auxin; [1]

(iii) shoot bends or grows to the **right**; [1]

(b) **(i)** slower; [1]

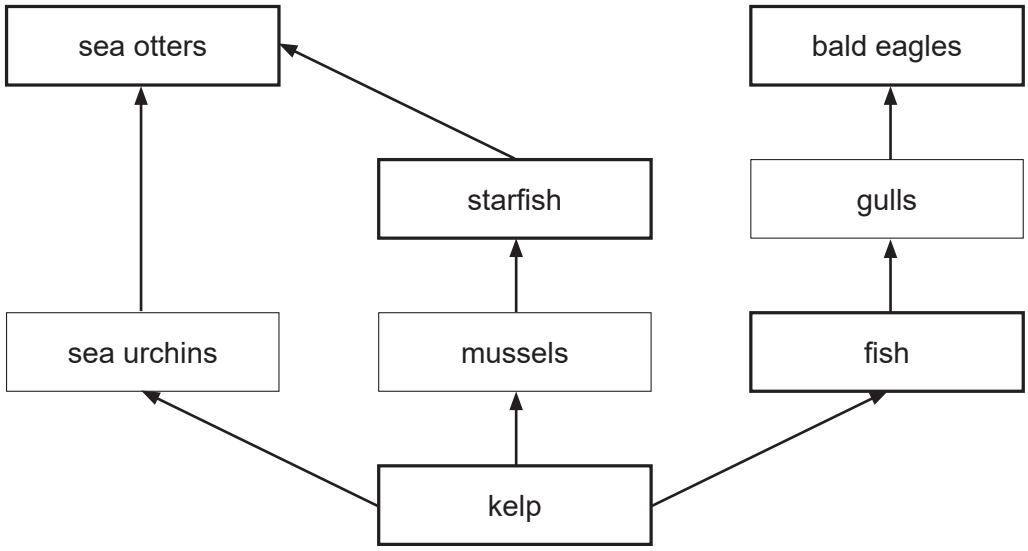
(ii) muscle/gland; [1] 5

5 **(a)** Any **two** from:
pH;
temperature;
enzyme concentration/substrate concentration; [2]

(b) **V** enzyme; lipase; either order
W substrate; fat/lipid; either order
Z product; glycerol; either order
[1] each correct answer [6] 8

AVAILABLE MARKS

6 **(a)**



[1] for kelp and sea otters in correct places
[1] for all other organisms in correct places
[1] for all 8 links
[1] for correct arrows [4]

(b) **(i)** kelp; [1]

(ii) sea otters; [1]

(c) Description – mass of kelp decreased;
Explanation – any **two** from (comparisons required for each point):
more sea urchins/number of sea urchins increased/mass of sea urchins increased;
fewer sea urchins eaten (by otters)/sea otters eat fewer sea urchins/sea urchins less predated on;
more kelp eaten (by sea urchins)/more intake of kelp; [3]

(d) (2058 – 208) = 1850;
1850/208 × 100;
889.423077;
889.42
correct answer = [4] marks [4] 13

7 Indicative content

AVAILABLE MARKS

1. (use) oxygen;
2. (break down/use) glucose;
3. (produces/makes) carbon dioxide
4. (produces/makes) water;
5. mitochondria/exothermic;

Any **two** from:

6. movement/for muscles/for exercise/named exercise;
7. growth/repair;
8. reproduction;
9. production of heat/maintaining body temp/keep body temperature constant/ keep body temperature at 37 °C/warmth;
10. active transport/active uptake;

Must mention one **use of energy** to get into the top band.

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] 6

			AVAILABLE MARKS
8	**(a)**	kidney; [1]	
	(b)	110 (read from graph); 110 – 60; 50; correct answer worth [3] marks [3]	
	(c) **(i)**	30 + 40 + 80 + 100; 250; correct answer worth [2] marks [2]	
	(ii)	bar drawn to 250 or e.c.f. from part (i); [1]	
	(d) **(i)**	A; produced least urine/lowest amount/produced less urine than both B and C/produced 100 less than B and 140 less than C (comparison required); [2]	
	(ii)	(more) water lost in sweat/sweating (comparison required); (more) water lost in breathing out/exhalation/expiration; [2]	11
		Total	**60**