



**General Certificate of Secondary Education
2022**

**Single Award Science:
Biology**

Unit 1

Foundation Tier

[GSA11]

WEDNESDAY 23 FEBRUARY 2022, 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 Single Award Science

Candidates must:

- AO1** Demonstrate knowledge and understanding of scientific ideas, scientific techniques and procedures;
- AO2** Apply knowledge, skills and understanding of scientific ideas, scientific enquiry, techniques and procedures; and
- AO3** Analyse information and ideas to interpret and evaluate; make judgements and draw conclusions; 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. 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 'own figure rule' so that candidates are not penalised more than once for a computational error.

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.

COVID-19 Context

Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021–2022 only.

			AVAILABLE MARKS
1	<p>(a) A: Vacuole [1] B: Chloroplast [1]</p>	[2]	5
	<p>(b) (i) To let light pass through it</p>	[1]	
	<p>(ii) To make the parts of the onion skin cells easier to see</p>	[1]	
	<p>(c) Y</p>	[1]	
2	<p>(a) (i) Any two from:</p> <ul style="list-style-type: none"> • (lung) cancer • emphysema • bronchitis 	[2]	8
	<p>(ii) Nicotine</p>	[1]	
	<p>(b) (i) Oxygen</p>	[1]	
	<p>(ii) Amy and Pat</p>	[1]	
	<p>(iii) Pat because percentage of CO in the blood stayed high</p>	[1]	
	<p>(c) Air pollution/traffic (fumes)/passive smoking</p>	[1]	
	<p>(d) Alcohol</p>	[1]	
	<p>(c) (i) The number of foxes decreases/there are fewer foxes [1] less foxes to hunt/eat/prey on the robins [1]</p>	[2]	
3	<p>(a) (i) Oak tree</p>	[1]	8
	<p>(ii) Sun</p>	[1]	
	<p>(b) (i) 305 kJ</p>	[1]	
	<p>(ii) Movement/reproduction/growth</p>	[1]	
	<p>(c) (i) The number of foxes decreases/there are fewer foxes [1] less foxes to hunt/eat/prey on the robins [1]</p>	[2]	
	<p>(ii) Disease/new predators</p>	[1]	
	<p>(d) All the animals will be gone/there will be no food chain</p>	[1]	

- 4 (a) A. Ovary [2]
B. Uterus

(b) (i)

Method of contraception	Permanent	Prevents sexually transmitted diseases	Changes hormone levels
female sterilisation	✓		
condom		✓ [1]	
contraceptive pill			✓ [1]

[2]

- (ii) Sperm [1]
fertilisation [1] [2]

6

- 5 (a) Fungus produces a chemical/antibiotic [1] that destroys/kills bacteria [1] [2]

(b) Penicillin [1]

(c) Florey/Chain [1]

(d) Colds and flu are caused by a virus/antibiotics do not destroy a virus [1]

5

- 6 (a) Water [1]

(b) (i) Cholesterol [1]

(ii) Reduce/no/stop blood flow; [1]
reduce/no oxygen/glucose reaching heart tissue; [1]
no/less respiration [1] [3]

(c) Stop smoking/more exercise /reduce stress [1]

6

- 7 (a) (i) Any **two** from:
• same volume (amount) of water;
• same mass of food;
• same distance of burning food from test tube; [2]

(ii) Lost to the surroundings [1]

(b) (i) 2300 kJ [1]

(ii) 150/750 [1]
 $0.2 \times 100 = 20\%$ [1] [2]
[2] marks for correct answer only

(c) A – contains less energy/kJ [1]

7

- 8 (a) Any **two** from:
- Chemical messengers
 - produced by glands
 - travel in the blood
 - to a target organ
- [2]
- (b) (i) 5 correct points [2]
4 correct points [1]
Line (ruler used to join points) [1]
- [3]
- (ii) increase to **age 12** [1] then decrease [1]
- [2]
- (iii) Male hormones reach peak at age 14/older than females [1]
female hormone level is higher than males from age
10–13 years [1]
- [2]

9 **Indicative content**

- discontinuous
- distinct groups/individuals clearly divided into two or more groups
- tongue rolling/hand dominance/blood group (or other correct)
- displayed on bar chart

- continuous
- a gradual change in a characteristic across a population/many possible values
- height/weight (or other correct)
- displayed on a histogram

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe variation using six, seven or eight points above in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates must use appropriate specialist terms throughout to describe variation using three, four or five points above in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates describe variation using one or two of the points above. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and have made limited use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

Total

AVAILABLE MARKS
9
6
60