



**General Certificate of Secondary Education
2023–2024**

**Single Award Science:
Biology**

Unit 1

Foundation Tier

[GSA11]

WEDNESDAY 21 FEBRUARY 2024, 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

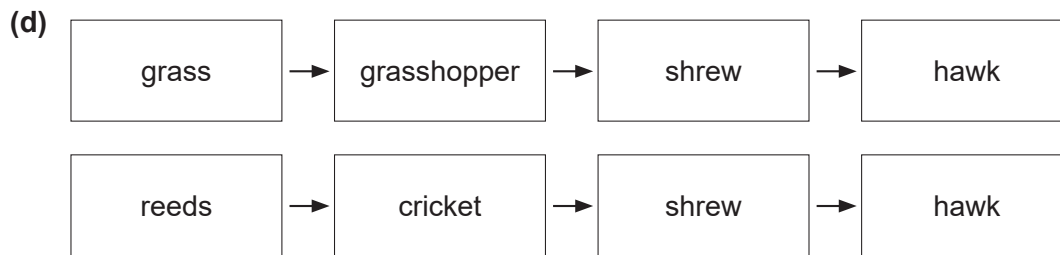
In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

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.

1	(a) Part	Function	AVAILABLE MARKS
	cytoplasm	allows the movement of some substances into and out of the cell	
	nucleus	control centre of the cell	
	cell membrane	chemical reactions take place here	
	3 lines correct [2]		
	2 or 1 correct [1]	[2]	
	(b) Vacuole/cell wall/chloroplasts		[1]
	(c) Divide [1]		
	the same [1]	[2]	5
2	(a) (i) Vitamin C		[1]
	(ii) Calcium		[1]
	(b) (i) Food B has more fat		[1]
	(ii) Food B has more fibre		[1]
	(iii) 3073 – 350 [1]		
	= 2723 [1]	[2]	
	(c) (i) Blue		[1]
	(ii) Sugar		[1]
			8

- 3 (a) Shrew/frog [1]
 (b) Sun [1]
 (c) 3 [1]



- producer [1]
 consumers in the correct order [1] [2]
 (e) Decrease grasshopper numbers [1]

- 4 (a) Brain [1]
 spinal cord [1] [2]
 (b) (i) Voluntary action is slower/requires conscious thought [1]
 (ii)

Action	Voluntary action	Reflex action
sneezing		✓
writing	✓	
heart beating		✓
reading	✓	

- [1] 2/3 correct
 [2] all 4 correct [2]

- 5 (a) (i) A = penis
 B = scrotum [2]
 (ii) Produce sperm [1]
 (b) (i) The sperm tubes are cut [1]
 (ii) It is permanent/difficult to reverse [1]
 (c) (i) Condom [1]
 (ii) The contraceptive pill/hormone implant [1]

AVAILABLE MARKS
6
5
7

			AVAILABLE MARKS	
6	(a)	(i) Shows a gradual change in the a characteristic across a population/ no discrete groups [1]	[1]	8
		(ii) x-axis labelled as height/cm [1] 3 correct bars [2] (2 bars [1]) [3]	[3]	
		(iii) Histogram [1]	[1]	
	(b)	(i) Change [1] in the genes/DNA/chromosomes [1]	[2]	
		(ii) UV light [1]	[1]	
7	(a)	(i) As the length of a hedgerow increases, the number of species of birds increases [1]	[1]	5
		(ii) Biodiversity will increase [1] because there are more habitats/food/shelter [1]	[2]	
	(b)	(i) The mass (of herring) had dropped to nearly zero [1]	[1]	
		(ii) There was an increase in mass of herring numbers after quotas were introduced [1]	[1]	
8	(a)	Any two from: • high blood glucose • glucose in the urine • lethargy • thirst [2]	[2]	8
	(b)	(i) Blood glucose levels are higher (throughout the day) [1] blood glucose levels fluctuate the most [1]	[2]	
		(ii) Have not eaten (breakfast) [1]	[1]	
		(iii) $40 \div 80 \times 100$ [1] 50% [1]	[2]	
		(iv) Carbohydrates/sugar [1]	[1]	

- 9 (a) Passed in droplets/coughs/sneezes [1]
the further away people are the less chance that the droplets will reach another person [1] [2]

(b) **Indicative content**

- in vitro
- cells in the lab
- to find out if the drug works
- animal testing
- on a complete organism/on an organism with an immune system
- clinical testing
- humans/volunteers
- to find the dosage
- to find out if there are side effects

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe each test using six or more of the 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 use some appropriate specialist terms throughout to describe each test using four or five of the 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 each test using one, two or three of the above points. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and the form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

Total

**AVAILABLE
MARKS**

8

60