



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

**Single Award Science:
Biology**

Unit 1

Foundation Tier

[GSA11]

MONDAY 13 NOVEMBER 2023, 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

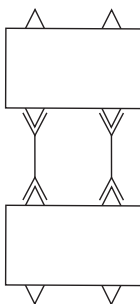
Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

1 (a)	Part of cell	Function	AVAILABLE MARKS
	nucleus	forms a boundary around the cell	3
		control centre of the cell	
	cytoplasm	chemical reactions take place here	
		[2]	
	(b) Cell wall/vacuole	[1]	
2 (a)	Ovary	[1]	6
	(b) (B) A C E D Any 2 in the correct place [1] All correct [2]	[2]	
	(c) (i) Rhythm	[1]	
	(ii) Condom	[1]	
	(d) Very difficult to reverse/he may want to have children in later life/ permanent	[1]	
3 (a)	Type of microbe	Disease	
	bacteria	salmonella	4
		flu	
	fungi	athlete's foot	
		[2]	
	(b) Penicillin [1] bacteria [1]	[2]	

			AVAILABLE MARKS	
4	(a) (i)	As the years increase the number of water snails decrease	[1]	
	(ii)	200 – 400	[1]	
	(b)	3500 – 800 [1] 2700 [1]	[2]	4
5	(a)	60 bpm	[1]	
	(b)	Student A's pulse rate rises more slowly/student B's pulse rate rises quicker [1] Student A's (maximum) pulse rate is lower/student B's (maximum) pulse rate is higher [1]	[2]	
		(c)	1½ minutes	
	(d) (i)	1500 kJ	[1]	
		(ii)	Teenagers are more active [1] teenagers are still growing [1]	
6	(a) (i)	Nucleus	[1]	
	(ii)	Gene	[1]	
	(b)	Double helix	[1]	
	(c)	Genome	[1]	
	(d) (i)	Height and mass	[1]	
		(ii)	2/5 [1] 40% [1]	

			AVAILABLE MARKS
7	(a) Taking in less salt/eating food lower in saturated fats/eating foods that lower your cholesterol	[1]	5
	(b) Any two from: - kidney failure - amputation/stroke - eye damage/blindness	[2]	
	(c) Any one from: - number of people with diabetes in the population is rising - cost of (producing) insulin/insulin needed every day/a lot of insulin is used - lasts a long time/get it for life	[1]	
	(d) Type 1 diabetes, the reading is between 5.0 and 9.0 mmol/L	[1]	
8	(a) A starch not present B starch present	[1]	3
	(b) (i) Green	[1]	
	(ii) Number of bubbles of gas were counted over the same amount of time	[1]	
9	(a) (i) Grass → insects → spiders → frogs → foxes	[1]	10
	(ii) Increase in stoats [1] stoats have more voles to eat [1]	[2]	
	(b) Any two from: - more food - more habitats - more shelter/more camouflage/more protection from predators - more animals/plants/insects	[2]	
	(c) A living factor	[1]	
	(d) Carbon dioxide levels/size of ice fields/pH/temperature/water levels	[1]	
	(e) As the concentration of acid rain decreases the number of lichen on trees increases	[1]	
	(f) (i) Spruce	[1]	
	(ii) 20%	[1]	

10 (a) (i)



[1]

(ii) Antigen

[1]

(iii) Lymphocytes

[1]

(b) Active immunity/creates memory lymphocytes [1]
Advantage - long lasting [1]

[2]

5

11 Indicative content

- protein found in meat, nuts, seeds, seafood, beans, peas, poultry, eggs
- growth/repair
- crush food
- place in a test tube/boiling tube/on a spotting tile
- add biuret reagent
- (if the biuret reagent changes) colour from blue to purple/lilac then protein is present

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe how to carry out the food test investigation using five to seven 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 how to carry out the food test investigation using three or four 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 partially describe how to carry out the food test investigation using one or two 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]

6

Total

60