



**General Certificate of Secondary Education
2020–2021**

**Single Award Science:
Biology**

Unit 1

Foundation Tier

[GSA11]

WEDNESDAY 11 NOVEMBER, 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.

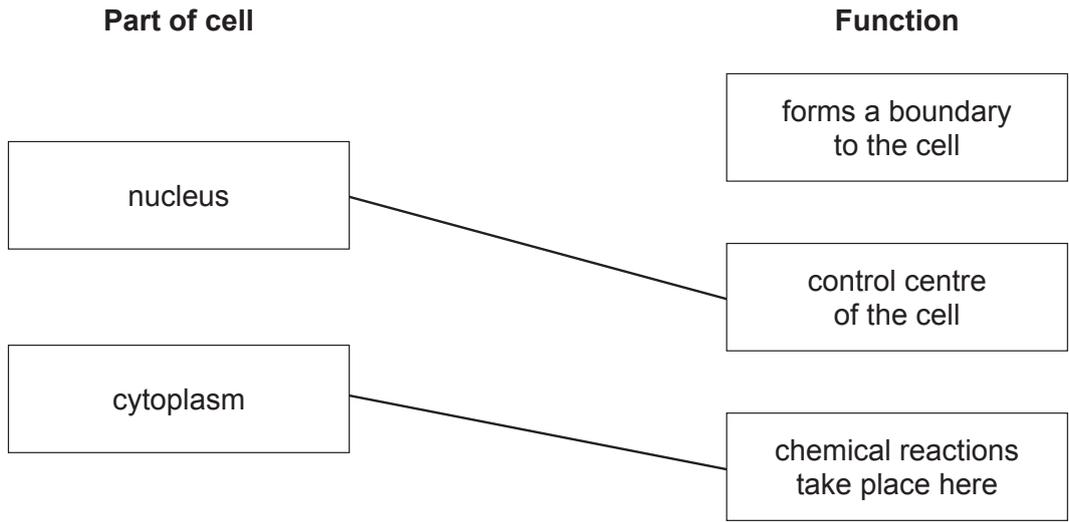
Marking Calculations

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)



[2]

(b) Vacuole/cell wall

[1]

(c) (i) Makes parts of the cell, like the nucleus, easier to see

[1]

(ii) Protect the lens should the lens make contact with the slide/prevents the cells drying out

[1]

(d) Divide [1]
the same [1]

[2]

7

2 (a) (i)

Food type	Main source
fibre	wholemeal bread [1]
fat [1]	butter

[2]

(ii) Iodine

[1]

(b) Chemical [1]
respiration [1]

[2]

(c) (i) Age/gender

[1]

(ii) Meal 1 as it has less kJ of energy than meal 2

[1]

7

AVAILABLE
MARKS

- 3 (a) (i) Arrows pointing to the right – must be an arrow between each level of the food chain [1]
- (ii) Shrew [1]
- (b) Sun/sunlight [1]
- (c) Captures light energy from the sun/provides food for primary consumer/ carries out photosynthesis [1]
- (d) (i) $40\,000 + 5\,000 + 20\,000 = 65\,000$ kJ [1]
- (ii) 1st mark for benefit of not having rabbits in the field
2nd mark for explanation.
Must be a link between the benefit and the explanation.
More grass (for cows) [1] cows getting fatter [1]
or
More cows can graze [1] more cows to sell/more money for cows [1] [2]

AVAILABLE
MARKS

7

4 (a)

Function	Part
fertilisation takes place here	D [1]
produces eggs	A [1]

[2]

- (b) (i) Testes [1]
sperm ducts [1]
urethra [1] [3]
- (ii) Feeds the sperm [1]
- (c) (i) Zygote [1]
- (ii) Divides many times/to form a ball of cells [1]

8

- 5 (a) Clear area around fungus [1]
bacterial growth on rest of plate [1] [2]
- (b) Florey/Chain [1]
- (c) Chemicals produced by fungi [1]
to kill bacteria/reduce their growth [1] [2]
- (d) Sexual contact [1]

6

			AVAILABLE MARKS
6	(a)	(i) Pancreas [1]	5
		(ii) X placed on liver [1]	
	(b)	(i) Eating a meal high in carbohydrate/sugar [1]	
		(ii) Blood glucose levels would stay high/would not decrease [1] glucose would not be converted to glycogen/respiration is not increased /less uptake of glucose into the cells [1] [2]	
7	(a)	(i) Cancer cells have larger nucleus [1] cancer cells have thicker cell membrane/cancer cells are smaller than normal cells [1] [2]	7
		(ii) Burst through blood vessel wall into bloodstream/travel in blood [1]	
	(b)	(i) Ultraviolet/UV radiation [1]	
		(ii) $12\,000 - 4\,000 = 8\,000$ [1] $8\,000 \div 4\,000 \times 100 = 200\%$ [1] 200% [2] [2]	
		(iii) Increased awareness and detection/increased use of tanning beds/ depletion of the ozone layer [1]	
	8	(a)	
(ii) Living factor [1]			
(iii) More lichen [1] less pollution in Oxford Island [1] [2]			
(b)		Any two from:	
		<ul style="list-style-type: none"> • limiting fishing days • decommissioning some boats/limiting the number of licenses • limits on net sizes • larger mesh sizes • sanctuaries 	
		[2]	

9 Indicative content

- lymphocytes
- produce antibodies
- in response to the antigens on microorganism
- the antibodies are complementary in shape
- they latch on to the antigen
- this clumps them together/immobilises them
- phagocytes
- engulf
- and digests microorganism

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe and explain how white blood cells respond to infection using more than six 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 to describe and explain how white blood cells respond to infection 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 partially describe and explain how white blood cells respond to infection using one to three of the above points. 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

6

60