Rewarding Learning

General Certificate of Secondary Education
2018–2019

Single Award Science: Biology

Unit 1

Foundation Tier

[GSA11]

WEDNESDAY 27 FEBRUARY 2019, 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

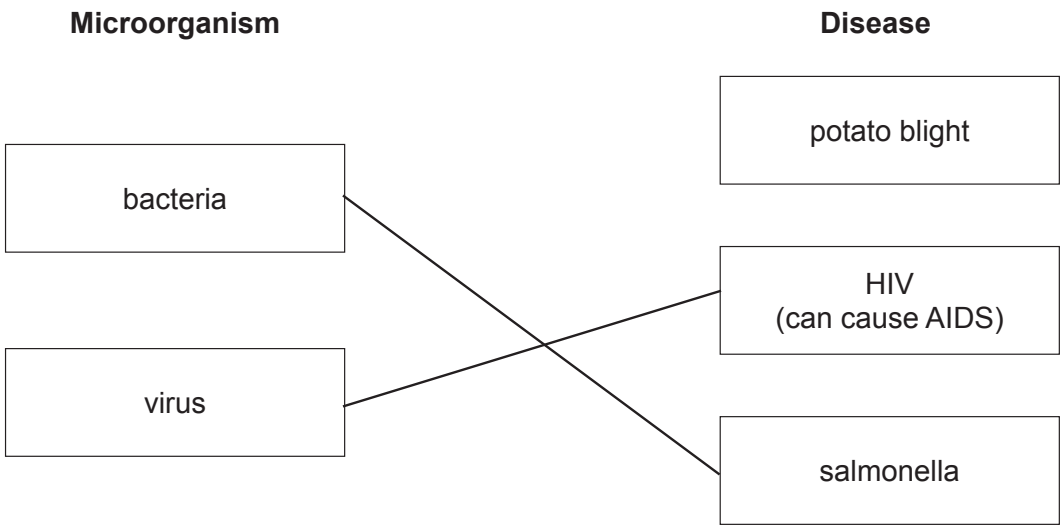
In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

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.

AVAILABLE MARKS

1 (a)



[2]

(b) Bacteria [1]

(c) Avoiding direct contact/wear 'flip flops' in changing rooms/swimming pools [1] 4

2 (a) (i) A Vacuole [1]
B Chloroplast [1] [2]

(ii) 3 [1]

(b) (i) **B D A C E** [2]
Any **two** in correct order [1] [2]

(ii) You have a wider field of view/you can see **more** cells/easier to find what you are looking for [1] 6

3 (a) (i)

Letter	Name
A	**Penis**
B	**Prostate gland**

[2]

(ii) Produces sperm [1]

(b) (i) Sperm ducts are cut [1]

(ii) Is permanent [1] 5

					AVAILABLE MARKS
4	(a)	(i)	Squirrel/mouse/greenfly/moth larva/blue tit	[1]	
		(ii)	Energy flow	[1]	
		(iii)	Any **one** from: tree leaves → greenfly → blue tit → owl tree leaves → moth larva → blue tit → owl tree bark → moth larva → blue tit → owl [2] **Starts with tree leaves/tree bark** [1]	[2]	
	(b)		The number of moth larva will decrease [1] **more** moth larva eaten [1]	[2]	
	(c)	(i)	270 + 60 + 20 = 350 [1] 850 – 350 = 500 [2] 500 [2]	[2]	
		(ii)	Respiration	[1]	9
5	(a)		As planting density increases average mass of seedlings decreases [1] competition [1] for water/nutrients/light/space [1]	[3]	
	(b)		Any **two** from: • same amount of water • same amount of light • same temperature • left for same length of time • same amount of compost/same size of pot • same type of compost	[2]	
	(c)		Divide total mass of seedlings by planting density/15	[1]	6
6	(a)		75	[1]	
	(b)		Both pulse rates increase over time [1] pulse rate increased quicker when running/reached a higher pulse rate after 20 minutes [1]	[2]	
	(c)		50 ÷ 75 [1] × 100 = 66.7/67 [1]	[2]	5

AVAILABLE MARKS

7 Indicative content

- cholesterol
- narrowing of artery
- blood cannot reach heart (muscle cells)
- oxygen/glucose cannot reach heart (muscle cells)
- respiration cannot take place
- heart muscle (cells) die

Any **two** from:

- stress
- smoking
- lack of exercise

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe steps leading to a heart attack using **six to eight** 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 steps leading to a heart attack 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 steps leading to a heart attack 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] 6

					AVAILABLE MARKS
8	(a)	(i)	Any **two** from: • produced by glands • travel in the blood • to a target organ	[2]	
		(ii)	Reduces blood glucose levels [1] Any **one** from: • converts glucose to glycogen • increased respiration • increases the rate at which glucose is moved into cells [1]	[2]	
	(b)		Type 1 diabetes [1] pancreas does not produce any insulin [1]	[2]	
	(c)	(i)	Phototropism	[1]	
		(ii)	Shoot visibly taller [1] shoot tip bent over towards the light [1]	[2]	
		(iii)	Grow straight up	[1]	10
9	(a)	(i)	Cushions the foetus	[1]	
		(ii)	Risk of Down's syndrome increases with age [1] under 35 risk of miscarriage exceeds that of Down's syndrome/ over 35 risk of Down's syndrome greater than miscarriage [1]	[2]	
		(iii)	No risk of having a miscarriage	[1]	
	(b)	(i)	Random changes in the structure/number [1] of chromosomes/genes/DNA [1]	[2]	
		(ii)	Cystic fibrosis	[1]	
	(c)	(i)	Double helix	[1]	
		(ii)	Genome	[1]	9
				Total	**60**