New Specification

Rewarding Learning

General Certificate of Secondary Education
2018–2019

Single Award Science: Biology

Unit 1

Foundation Tier

[GSA11]

WEDNESDAY 7 NOVEMBER 2018, 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)	The sun	[1]	
	(b)	Ladybird	[1]	
	(c)	Increase [1] no ladybirds to eat them [1]	[2]	4
2	(a)	Arrow from the right towards the plant	[1]	
	(b) (i)	Phototropism	[1]	
	(ii)	Plant gets more light [1] more photosynthesis/more growth [1]	[2]	4
3	(a) (i)	**A.** Cell membrane [1] **B.** Cytoplasm [1]	[2]	
	(ii)	Control centre/contains genetic information/contains chromosomes	[1]	
	(b)	Chloroplast	[1]	
	(c)	Divide [1] same [1]	[2]	6
4	(a)	Brick red [1] blue/stays the same [1]	[2]	
	(b)	Sugar [1] starch [1] (either order)	[2]	
	(c)	Benedict's	[1]	5
5	(a) (i)	Kills the bacteria	[1]	
	(ii)	Penicillin	[1]	
	(iii)	Florey/Chain	[1]	
	(b) (i)	Higher income groups use more antibiotics than lower income [1] the number of antibiotics used by lower income groups is increasing but higher income is staying the same [1]	[2]	
	(ii)	The high income use does not change [1] the low income use will increase steeply [1]	[2]	7

AVAILABLE MARKS

6 **(a)** Change [1]
in the structure/number of genes/chromosomes [1] [2]

(b) Any **two** from:
- More people got skin cancer/rate of skin cancer is increasing, from 1995 to 2010/over time [1]
- more females get skin cancer than males [1]
- rapid increase in skin cancers from 2005 [2]

(c) **(i)** To reduce skin cancer [1]

(ii) Wear sunscreen/avoid going out in the midday sun/cover up in the sun/stay in the shade [1]

(d) **(i)** Nuala 45 mins [1]
Jane 0 mins [1] [2]

(ii) 60/120 [1]
50% [1] [2]

(iii) 5 bars correct [2]
4 bars correct [1] [2] 12

7 **(a** **(i)** **E** [1]

(ii) **D** [1]

(b) Adds fluid to feed the sperm [1]

(c) **(i)**

Contraceptive	How it works
Condom	Acts as a barrier to trap sperm
Contraceptive pill	Prevents release of egg by changing hormone levels
vasectomy	Sperm tubes cut to prevent sperm entering penis

[1] mark [1]

(ii) Contraceptive pill [1]

(iii) Vasectomy [1]
very difficult or impossible to reverse [1] [2]

(d) Moral/ethical/religious reasons [1] 8

AVAILABLE MARKS

8 **(a)** Any **three** from:
- Insulin is a chemical (messenger) [1]
- produced in a gland/pancreas [1]
- travels in the blood [1]
- to a target organ [1] [3]

(b) **Indicative content:**
- insulin **lowers** blood glucose levels
- insulin ceases to function/isn't enough
- glucose not converted to glycogen
- blood glucose levels stay high
- symptom – increased glucose in urine/thirst/need to go to the toilet more often/coma (if treatment delayed)/lethargy
- long term effect – eye damage/heart disease/strokes/kidney damage/ loss of limbs
- due to obesity/increase in fat or carbohydrate intake/reduced exercise

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe and explain the effect of diabetes on humans using **5, 6 or 7** 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 the effect of diabetes on humans using **3 or 4** 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 and/or explain the effect of diabetes on humans using **1 or 2** 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] 9

9 **(a)** **(i)** It outcompetes other (native) species/it was brought from another country/reproduces rapidly [1]

(ii) Extinction is the loss of all members of that species/none of the species are left alive [1]

(b) **(i)** Poison kills foxes but leaves the native animals alive [1]

(ii) Dingos may kill farm animals [1]
fences exclude foxes without harming farm animals [1] [2] 5

Total **60**