



Rewarding Learning

**General Certificate of Secondary Education
2013–2014**

Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]

MONDAY 24 FEBRUARY 2014, MORNING

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

1 (a)

Food group	Function in the body
protein	growth and repair
carbohydrate	to give us energy
fibre	prevents constipation

[3]

(b) (i) Iodine

[1]

(ii) Blue/black

[1]

(iii) Heated

[1]

(c) (i)

Vitamin	Foods
C	Lemon
	Kiwi
D	Fish
	Eggs

[$\frac{1}{2}$] each, round down

[2]

(ii) prevents scurvy

[1]

9

2 (a) Discontinuous

[1]

(b) For – increases vitamin D/feel better

Against – too much sun can cause skin cancer

[2]

3

AVAILABLE
MARKS

3 (a) (i) 1 minute [1]

(ii) Any two from

- fit person has a lower resting heart rate before they begin to exercise/fit person has a lower heart rate
- fit person's heart rate rises more slowly/unfit person's heart rate rises more quickly
- maximum heart rate reached by fit person is a lot lower than the unfit person/fit person's heart rate rises less
- the fit person's heart rate drops quicker (when they finish exercise)/the heart rate of the fit person returns to normal resting heart rate in a quicker time/fit person has faster recovery time
- fit person has a maximum heart rate for a shorter time [2]

(b) Incidence of heart disease increases with age [1]
men have a higher incidence of heart disease than women of same age [1] [2]

(c) Any two from

- expensive drugs/medicines/expensive equipment/surgery/transplant
- patients need long-term care
- many people have heart disease [2]

4 (a) (i)

	b	b
B	Bb	Bb
b	bb	bb

Gametes correct [1]

Offspring correct [1] [2]

(ii) 50% [1]

(b) (i) double helix [1]

(ii) Nucleus [1]

(iii) genes [1]

AVAILABLE
MARKS

7

6

			AVAILABLE MARKS
5	(a) (i) C A D E B Any two in correct sequence [1] All correct [2]	[2]	6
	(ii) It is much quicker/shorter pathway	[1]	
(b) (i)	Plant bending towards the light	[1]	
	(ii) Phototropism	[1]	
	(iii) hormones	[1]	
6	(a) (i) Any one <ul style="list-style-type: none"> ● leaves greenfly blue tit owl ● leaves moth larva blue tit owl ● bark moth larva blue tit owl (correct animals) [1] Starts with producer [1]	[2]	5
	(ii) Squirrel/mouse/greenfly/moth larva/blue tit	[1]	
(b)	The number of squirrels would increase [1] as there are less foxes to eat them/more squirrels survive to breed or they survive longer to breed [1]	[2]	
7	(a) Any three from <ul style="list-style-type: none"> ● Vaccines cause antibodies (to be produced) (by white blood cells) ● called lymphocytes ● these antibodies lock on to antigens on pathogen ● due to complementary shape ● clumping/immobilisation ● destroyed by phagocytes/phagocytosis/(other) white blood cells ● memory cells 	[3]	10
	(b) (i) Any two from <ul style="list-style-type: none"> ● to see how effective the drug is on humans ● to find out what the required dose is ● to see if there are any harmful side effects/to check if safe ● animals are a different species/react differently 	[2]	
	(ii) People think it is cruel/harms the animals/any ethical issue	[1]	
	(c) Cheaper to produce (than antibiotics and painkillers) [1] average profit per drug is greater (than antibiotics and painkillers) [1]	[2]	
	(d) Antibiotic resistance/bacteria have mutated [1] due to overuse/not taking the full course [1]	[2]	

8 (a) Both bars completed correctly and shading	[1]	AVAILABLE MARKS
(b) 200 [1] 40 [1]	[2]	
(c) With increased cannabis use, increased number of users have depression	[1]	
(d) User – Impaired judgement qualified/lack of inhibition qualified/liver or brain damage [1] Society – Family breakdown/absenteeism at work/antisocial behaviour/violence/cost of treating alcohol linked diseases/ crime [1]	[2]	

9 (a) (i) Non-living factors [1]

(ii) Climate change/size of polar ice caps/sea levels [1]

(b) **Indicative content**

- Plants take in/use carbon dioxide
- Process A is photosynthesis/by photosynthesis
- Plants/animals produce carbon dioxide
- Process B is respiration/by respiration
- Burning/use of fossil fuels produces carbon dioxide
- Process C is combustion/by combustion
- Deforestation
- Increased combustion/increased use of fossil fuels

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe the carbon cycle and why it has become unbalanced using six to eight of the points above, and which must include the names of at least two of the processes (A, B and C), 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 the carbon cycle and why it has become unbalanced using three to 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 the carbon cycle and/or why it has become unbalanced 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 have made limited use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Not worthy of credit.	[0]

[6]

Total

AVAILABLE
MARKS

8

60