Rewarding Learning

General Certificate of Secondary Education
2012–2013

Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]

MONDAY 25 FEBRUARY 2013
9.30 am–10.30 am

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.

				AVAILABLE MARKS
1	(a)			

Type of microorganism	Disease
virus	polio
fungi	**thrush**
bacteria	gonorrhoea

one mark for each correct answer [3]

(b) tar [1] nicotine [1] (either order) oxygen [1] [3] 6

2 **(a)** Ovary – produces eggs (ova) [1]
Uterus – where foetus (baby) develops [1] [2]

(b) hormone [1]
egg [1] [2]

(c) May eventually want children/might change mind/sterilisation permanent [1]
as only 20 year olds/just married/have no children [1] [2] 6

3 **(a)** **(i)** Producer [1]

(ii) Sun/sunlight [1]

(b) Continuous [1]

(c) **(i)** (Random) changes in the (structure/number) [1]
of chromosomes/genes/DNA [1] [2]

(ii) (skin) cancer/Down syndrome/any appropriate alternative [1] 6

4 **(a)** **(i)** Plants/named plant [1]

(ii) Respiration [1]

(iii) Increased combustion/increased use of fossil fuels [1]
deforestation [1] [2]

(b) More evidence of climate change [1]
Better education about global warming [1] [2] 6

				AVAILABLE MARKS
5	(a)	(i)	140 – 50 [1] 90 [1] (1 correct reading from graph and correct answer through non-sequential marking = 1) [2]	
		(ii)	More obesity [1]	
	(b)	(i)	Any **two** from: ● high number of patients affected/more people with diabetes ● cost of (producing) insulin/insulin needed every day/a lot of insulin is used ● long term effect named and explanation of cost ● lasts a long time/get it for life [2]	
		(ii)	Not taking insulin/taking incorrect amount of insulin/not controlling sugar/carbohydrate intake/not exercising [1]	
	(c)		Heart disease/stroke/blindness/circulatory problems [1]	7
6	(a)	(i)	Each point accurate (20 min = 70 bpm; 30 min = 70 bpm) [1] with correct line joining points from end of exercise [1] [2]	
		(ii)	35 bpm [1]	
		(iii)	50% [1]	
		(iv)	Any **three** from: ● more/quicker blood (or blood component) ● provides oxygen/glucose ● for respiration ● in muscles [3]	
	(b)		Men have higher cholesterol levels than women [1] cholesterol levels increase with age (in both sexes) [1] [2]	
	(c)		Any **two** from: ● reducing stress ● stopping smoking ● exercise ● reducing drinking of alcohol [2]	11

AVAILABLE MARKS

7 **(a)** 3 : 1/75%:25% [1]

(b) **(i)** Punnett Square

(gamete;)
(offspring based on gametes;)

	R	
R	RR	Rr
r		rr

[2]

(ii) Offspring genotypes RR ____ Rr rr [1]
(based on Punnett Sq)

Offspring phenotypes Red ____ Red White [1] 5
(based on genotypes)

8 **(a)** Living/biological [1]

(b) **(i)** Decrease in pollution between 1950–2000/decrease in pollution the further away from Belfast [1]
less fossil fuels used/more alternative fuels used/Belfast more polluted as has more industry [1] [2]

(ii) Any **two** from:
- same number of trees sampled at each point
- same area of each tree sampled
- same place on each tree sampled
- same time of year/season
- same type of trees
- same trees/geographical area [2] 5

AVAILABLE MARKS

9 **(a)** Indicative content

- modified/weakened/dead microorganisms/pathogens/named microorganisms
- (cause) antibody production
- by lymphocytes/white blood cells
- due to antigens present
- (if infected with same microorganism) antigens and antibodies combine/due to complementary shape
- causing clumping/immobilisation
- (long term immunity due to) creation of memory cells/antibody levels remain high/antibodies produced faster
- as antibodies produced by body is active immunity

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe how vaccinations work using **five 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 how vaccinations work using **three to 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 describe how vaccinations work 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]

(b) **(i)** The percentage of children vaccinated has increased [1]

(ii) The vaccination uptake does not reach 100%/not all children are vaccinated [1]

8

Total **60**