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Rewarding Learning

General Certificate of Secondary Education
2016–2017

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

TUESDAY 16 MAY 2017, AFTERNOON

MARK SCHEME

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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.

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				AVAILABLE MARKS
1	**(a)**	A – Earwig B – Earthworm C – Weevil D – Centipede All 4 correct = [3]; 2/3 correct = [2]; 1 correct = [1]	[3]	
	(b)	A + C (✓)	[1]	
	(c)	**(i)** Earwig – 11	[1]	
		(ii) Scale – [1] mark; Both bars correctly drawn – [1] mark each	[3]	8
2	**(a)**	A – Photosynthesis; B – Ingestion/eating/feeding/consumption; C – Respiration	[3]	
	(b)	Ecosystem – Groups of organisms and their environment Habitat – Place where an organism lives Biodiversity – Number of different types of plants and animals	[2]	5
3	**(a)**	**(i)** Oxygen/O_2	[1]	
		(ii) **Less** oxygen/gas/bubbles produced; Light intensity lower; So less photosynthesis	[3]	
	(b)	**(i)** Extended; surface; water	[3]	
		(ii) A simple outline showing extension	[1]	8
4	**(a)**	Small intestine marked with line labelled X	[1]	
	(b)	**(i)** Amylase	[1]	
		(ii) All bonds broken; 5 single molecules present	[2]	
		(iii) Glucose/maltose	[1]	
		(iv) Absorbed; into the bloodstream/blood capillaries/blood	[2]	
	(c)	Iodine; yellow/brown to blue-black	[2]	9

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			AVAILABLE MARKS
5	**(a)**	• Data mark, e.g. (oxygen falls) from **9.6** to **3.2** or drop of 6.4 or other correct data; • oxygen concentration falls; • maggots use the oxygen for respiration/maggots respiring [3]	
	(b)	So that oxygen used up would not be replaced/keep animals in/stop O_2/air getting in otherwise there would be no change in the oxygen concentration [1]	4
6	**(a)**	A: Brain; B: Spinal cord [2]	
	(b)	**(i)** 2 [1]	
		(ii) 3 [1]	4
7	**(a)**	Any **two** from: • thirst; • lethargy/tiredness; • high blood glucose; • glucose in the urine [2]	
	(b)	**(i)** Insulin; liver [2]	
		(ii) • Changes glucose to glycogen/stores glucose as glycogen; • Increased respiration of glucose; • Glucose converted to fat/glucose stored as fat; • Increased uptake of glucose [2]	
	(c)	**(i)** The percentage decreases with increasing age/age group/as children get older; 25 to 9/14 to 9/25 to 14, or down by 16 [2]	
		(ii) 1620 ÷ 100 × 25; = 405 [2]	
		(iii) Kim – incorrect; Mike – cannot tell from the data [2]	12

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				AVAILABLE MARKS
8	(a)	(i)	Can see more ground/wider field of view/can see more prey/can easily see rabbit/less likely to be seen by prey/less likely to be heard by prey/doesn't scare prey [1]	
		(ii)	**Sharp** beak/long or **curved** talons/forked tail [1]	
	(b)	(i)	14 breeding pairs = 28 chicks hatched; 50% survive = 14 chicks survive; 14 plus original 28 = 42 birds [3]	
		(ii)	Any **two** from: • habitats destroyed/deforestation; • birds emigrated; • some poisoned/poached/hunted/killed; • lack of food/starvation/no prey/competing for food; • disease [2]	
	(c)	(i)	Any **two** from: • Traps light or energy from the sun; • makes food/glucose/starch; • by photosynthesis [2]	
		(ii)	Common voles [1]	
		(iii)	Yellow oat grass → earthworms → common voles → red kites Arrows in correct direction from the producer [2]	12

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AVAILABLE MARKS

9 (a) Indicative content

- Substrate A broken down/Stain A removed;
- Substrate A complementary shape to/fits the active site of enzyme 2/fits into enzyme 2;
- Substrate B is **not** broken down;
- Substrate B is **not** complementary to either enzyme 1 or 2 or does not fit into both enzymes;
- Lock and key theory;
- Enzyme 1 does **not** break down/remove substrate A/B/Stain A or B or both
- Enzyme 1 is **not** complementary/does not fit/substrate A/B/Stain A or B or both

Response	**Marks**
Candidates must use appropriate specialist terms throughout using **at least 5** of the above points to describe the effect of the washing powder on **both** substrate molecules. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
Candidates must use some appropriate specialist terms using **3 or 4** of the above points to describe the effect of the washing powder on the substrate molecules. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates must use **1 or 2** of the above points to describe the effect of the washing powder on one the substrate molecules. They use limited spelling, punctuation and grammar and little use of specialist terms.	[1]–[2]
Response not worthy of credit.	[0]

[6]

(b) Enzyme(s) denatured/substrate would not fit into enzyme; so substrate/stain not broken down/stain remains on clothes [2]

8

Total **70**