Rewarding Learning

General Certificate of Secondary Education
2017–2018

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

TUESDAY 15 MAY, AFTERNOON

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)	(i)	The beetle has three pairs of legs (6 legs)/the beetle has three regions to body (head, thorax and abdomen)/not constant body temperature/exoskeleton/2 pairs of wings	[1]	
		(ii)	segmented/chaetae/body temperature not constant	[1]	
	(b)	(i)	insect	[1]	
		(ii)	annelids	[1]	
	(c)		Pitfall trap	[1]	5
2	(a)	(i)	A: respiration	[1]	
		(ii)	B: plants/producers/named plant; C: animals/consumers/herbivores/named herbivore; D: fossil fuels or named fossil fuel	[3]	
		(iii)	oxygen/O_2	[1]	
	(b)		**More** carbon dioxide/increase in CO_2; (**less**) photosynthesis; (less) CO_2 absorbed	[3]	8
3	(a)	(i)	Habitat	[1]	
		(ii)	Community	[1]	
	(b)	(i)	121 + 5 – 102 – 11; 13 (correct answer gets [2])	[2]	
		(ii)	513	[1]	
	(c)		Any **two** from: • Lack of food/starvation/competition for food • Disease • Predators/hunted by other animals • Adverse weather conditions described • Loss of habitat/destroyed habitat • Disease	[2]	7

			AVAILABLE MARKS
4	**(a)**	Any **two** from: • less salt/less fat; • 0.5 g (less salt) • B has 1.5 g and A has 2.0 g (salt) • B has 28.0 g and A has 33.5 g (fat) • 5.5 g (less) salt [2]	
	(b)	2.0; 2.0 ÷ 6 × 100; = 33.3% (correct answer gets [3]) [3]	
	(c)	Any **two** from: • Obesity • Heart disease/high cholesterol/heart attack/CHD/coronary artery blocked • Strokes • High blood pressure • Diabetes [2]	7
5	**(a)**	pondweed/microscopic algae [1]	
	(b)	3 and 4 [2]	
	(c)	Pondweed ⟶ Mayfly (nymphs) ⟶ Dragonfly (nymphs) ⟶ Brown trout [1] for all arrows; [1] for correct organisms [2]	5
6	**(a)**	**(i)** From right to left [1]	
		(ii) Phototropism [1]	
	(b)	Description: grows straight; Explanation: Any **three** from: • auxin • (auxin/hormone) produced in the tip • even amount hormone/auxin on both sides/equal distribution • even growth/cell elongation same on both sides [4]	6

AVAILABLE MARKS

7 **(a)** Any **two** from:
Volume/amount/concentration of starch/volume/concentration of amylase/pH/time [2]

(b) Any **three** from:
- Enzyme/Amylase is denatured
- Enzyme (active site) changed shape/no longer complementary
- Substrate/Starch is not broken down/amylase does not work
- Lock and key [3]

(c) **(i)** Heat/boil/water bath;
with Benedict's (reagent) [2]

(ii) Blue [1]

(d)

Name of digestive enzyme	Region of digestive system where the enzyme acts
amylase	small intestine/mouth/ileum/ duodenum
lipase	small intestine/ileum/duodenum
protease/pepsin	Stomach

[3] 11

8 **(a)** **(i)** Pancreas [1]

(ii) Liver [1]

(iii) Hormone/protein [1]

(b) **(i)** Lowers blood glucose levels [1]

(ii) Any **two** from:
- Glucose stored/turned into/converted into glycogen
- Glucose converted into fat
- More respiration (of glucose)
- More uptake (of glucose) [2]

(c) Any **two** from:
- Thirst
- Lethargy
- High blood glucose
- Glucose in urine
- Frequent urination [2]

		AVAILABLE MARKS
(d) (i) Increase; From 75 837 to 88 305/by 12 468 [2]		
(ii) lack of exercise/more fatty/sugary foods/obesity [1]		
(iii) 88 305 – 75 837 = 12 468; 12 468 ÷ 75 837 × 100; 16.4% (correct answer = [3]) [3]		14

9 (a) Indicative content

- Place leaf in **boiling** water/boil the leaf;
- To kill the leaf/ensure no further reactions take place;
- Place leaf in boiling ethanol;
- To remove chlorophyll;
- Place leaf in (boiling) water;
- To soften the leaf;
- Add iodine solution

Response	Marks
Candidates use appropriate terms throughout in describing the method. This must include **5–6** points from the indicative content. They use good spelling, punctuation and grammar skills. Form and style are of a high standard.	[5]–[6]
Candidates use appropriate terms throughout in describing the method. This must include **3–4** points from the indicative content. They use satisfactory spelling, punctuation and grammar skills. Form and style are of a satisfactory standard.	[3]–[4]
Candidates include **1–2** points from the indicative content when describing the method. They use limited spelling, punctuation and grammar and have made little use of specialist terms	[1]–[2]
Response not worthy of credit.	[0]

[6]

(b) Yellow-brown to blue-black [1] 7

Total **70**