



**General Certificate of Secondary Education  
2017–2018**

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**Double Award Science: Biology**

Unit B1

Foundation Tier

**[GSD11]**

**WEDNESDAY 21 FEBRUARY 2018, MORNING**

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**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.

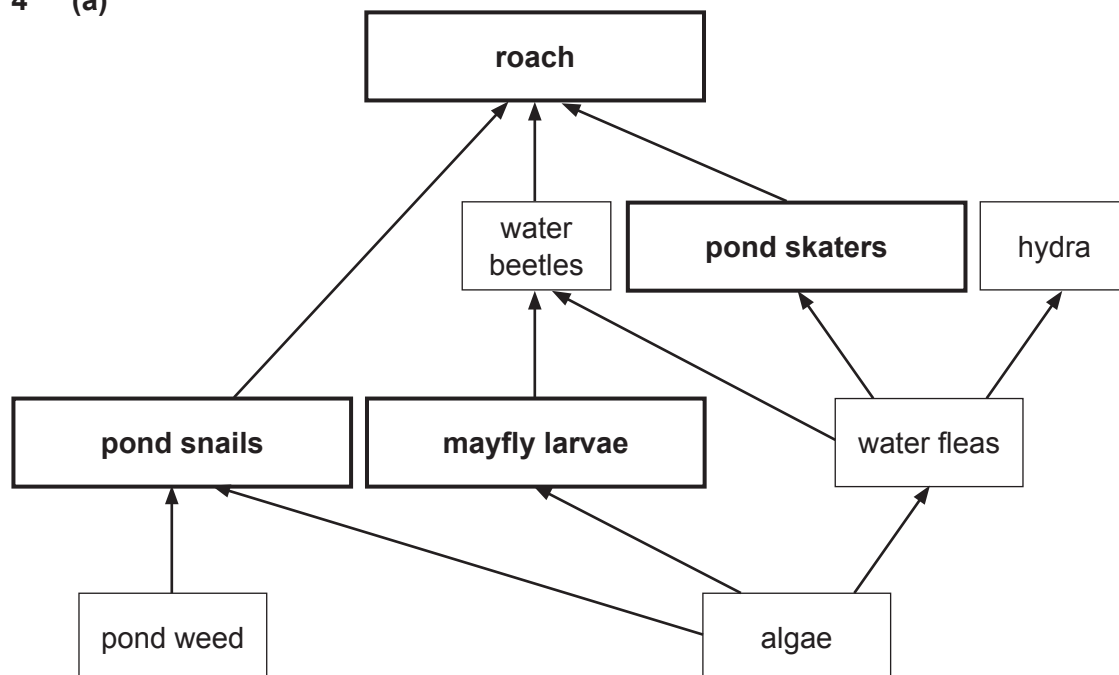
The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends 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) A Earthworm		
	B Spider		
	C Beetle		
	D Snail		
	E Centipede		
	1 correct = 1 mark [1]		
	2/3 correct = 2 marks [2]		
	4/5 correct = 3 marks [3]	[3]	
	(b) (i) pitfall (trap)	[1]	
	(ii) quadrat	[1]	5
2	(a) (i) water	[1]	
	(ii) carbohydrate/vitamin/mineral or named example glucose/starch/salt	[1]	
	(b) (i) because have less fat/contains less energy/calories accept converse	[1]	
	(ii) Any <b>two</b> from:		
	• CHD/heart disease/high cholesterol/heart attack		
	• obesity		
	• diabetes	[2]	5
3	(a) A photosynthesis;		
	B respiration;		
	C burning/combustion;		
	D feeding/eating/consumption/ingestion		
	[1] each	[4]	
	(b) (i) insulates;		
	increase;		
	heat;		
	warming		
	[1] each	[4]	
	(ii) melt/reduce/less	[1]	9

4 (a)



[1] each highlighted

[4]

(b) transfer of energy/consumption

[1]

(c) (i) pond weed/algae

[1]

(ii) Any **two** from:

- photosynthesis;
- trap light (energy);
- pass on energy to other organisms;
- make food

[2]

(d) roach

[1]

- (e) • decrease of hydra population/hydra die;  
 • no food/nothing to eat/lost food source/less food/water fleas are their only source/starvation

[2]

11

5 (a) (blue to) pink/colourless/clear

[1]

(b) (i) least drops to change colour/**only** took 10 drops/lowest number of drops/others took more drops

[1]

(ii) broccoli – (7 days) at room temperature

[1]

(c) peas – (7 days) at room temperature

[1]

(d) method of cooking/or described/or different growing conditions/  
 different types of peas and broccoli/different nitrate or fertilisers/genetics/  
 age/how it was grown/how fresh they were/disease

[1]

5

- 6 (a) (i) hormone [1]
- (ii) blood (stream) [1]
- (b) A;  
D and E; (in this order)  
B; [3]
- (c) (i) diabetes [1]
- (ii) Any **two** from:  
eye damage/heart disease/stroke/kidney damage  
amputation/poor circulation [2]
- (d) (i) brain and spinal cord (either order) [2]
- (ii) receptors [1]
- (iii) muscles/named muscle/gland/named gland [1]
- 7 (a) phototropism/tropism [1]
- (b) bends/grows towards the light;  
hormone (produced/made/released)  
in tip;  
(hormone is) auxin;  
hormone moves/more accumulates to shaded side/more on shaded side;  
hormone causes **cell** elongation on shaded side/cells lengthen

AVAILABLE  
MARKS

12

Response	Marks
Candidates use appropriate terms throughout to give at least five 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 to give at least three or four points from the indicative content. They use satisfactory spelling, punctuation and grammar. Form and style are of a satisfactory standard.	[3]–[4]
Candidates use appropriate terms throughout to give 1 or 2 points from the indicative content. They use limited spelling, punctuation and grammar and have made little use of specialist terms.	[1]–[2]
Response not worthy of credit.	[0]

[6]

7

8 (a) (i) abiotic	[1]	AVAILABLE MARKS
(ii) decreased/became acidic/less alkaline/pH went down/closer to sea, pH is higher/goes from 7.9 to 6.5	[1]	
(iii) pH paper/pH meter/universal indicator/pH probe	[1]	
(b) grazing/disease/competition/trampling/not enough space/cows/rabbits/horses/goat/insect/bacteria/fungi/human activity or described/manure/herbivores	[1]	
(c) • highest soil moisture content at sand dune 5; linked to 'water needed for photosynthesis'; • highest mineral content at sand dune 5; linked to 'more active uptake/more protein'; (accept converse for sand dune 1) • pH closer to neutral	[2]	6
9 (a) (i) • more enzymes/more pectinase/higher concentration enzymes; • more collisions with pectinase/more reactions with substrate/enzymes work faster/more breakdown/more E.S. complexes	[2]	
(ii) 24 and 6 read from graph; $24 - 6 = 18$ ; $18 \div 6 \times 100 = 300$ correct answer = [3] marks	[3]	
(b) There is only a certain amount of apple juice in the pulp/ no more juice left in the pulp/no pectin left/all pectin broken down no substrate left	[1]	
(c) (i) 6;	[1]	
(ii) Any <b>three</b> from: • enzyme not specific/enzymes specific/only pectinase can break down pectin • shape of enzyme/active site does not fit with substrate(pectin)/enzyme not complementary • lock and key • therefore pectin not broken down	[3]	10
<b>Total</b>		<b>70</b>