



Rewarding Learning

**General Certificate of Secondary Education
2015–2016**

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

WEDNESDAY 24 FEBRUARY 2016, 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

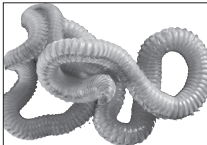

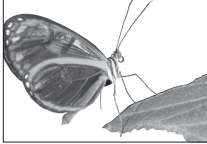
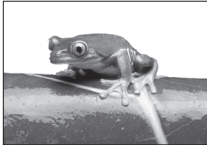
Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

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.

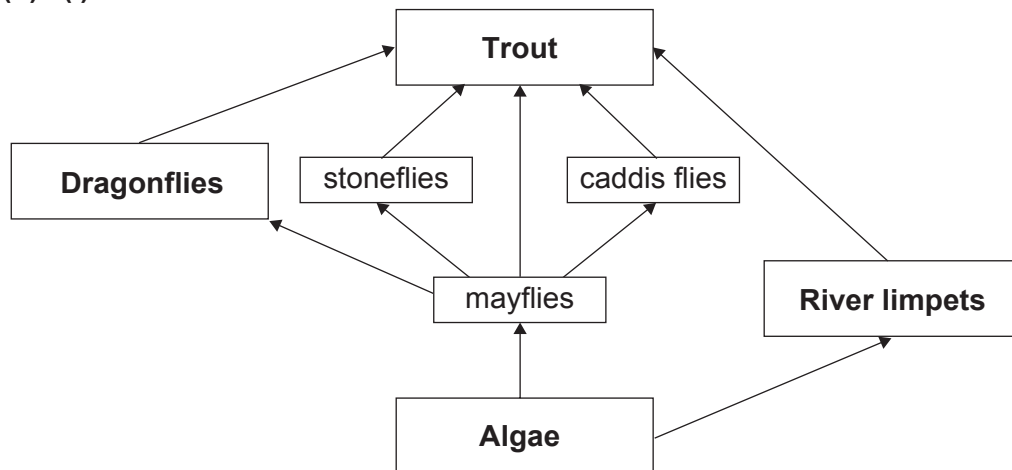
The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed 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	Organism	Feature	AVAILABLE MARKS
	annelid  <small>© Alexander Semenov / Science Photo Library</small>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">has an exoskeleton</div>	
	flowering plant  <small>© Gilles Mermet / Science Photo Library</small>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">is segmented</div>	
	insect  <small>© Sinclair Stammers / Science Photo Library</small>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">has a backbone</div>	
	chordate  <small>© Simon Murrell / Cultura / Science Photo Library</small>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">produces seeds</div>	
	all 4 correct [3] 2 or 3 correct [2] 1 correct [1]	<div style="text-align: right; margin-right: 20px;">[3]</div>	3
2	(a) Carbon dioxide [1] Heat [1]		[2]
	(b) Cutting down trees in forests Rise in sea levels Changes in weather patterns Burning of fossil fuels all 4 correct [3] 3 correct [2] 2 or 1 correct [1]	C E E C	[3]
			5

3 (a) Place where an organism lives [1]

(b) (i)

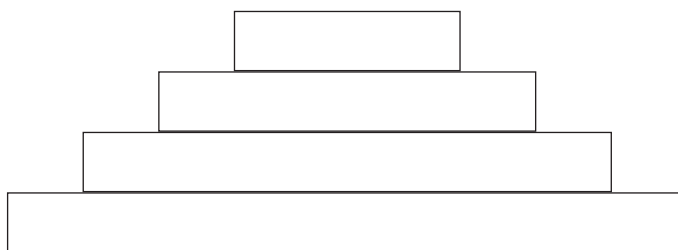


[4]

(ii) Algae [1]

(iii) Trout [1]

(iv) Third diagram



[1]

(c) (i) Number of (different) species/number of (different) types
All the different species/types [1]

(ii) More soluble/soaks into soil straight away [1]

(iii) Farmyard manure/compost/slurry/cow faeces/animal waste [1]

AVAILABLE MARKS

11

			AVAILABLE MARKS	
4	(a)	Process A = Respiration Process B = Feeding/eating/ingestion/consumption	[2]	6
	(b) (i)	water/H ₂ O; carbon dioxide/CO ₂ (either order) oxygen/O ₂ ;	[3]	
	(ii)	In respiration/for energy/cellulose/oil/starch/protein/amino acids/ reproduction/store in seeds	[1]	
5	(a) (i)	All points correct [2]/3 or 4 points correct [1]; line [1]	[3]	11
	(ii)	As distance from the lamp increased, volume of gas collected decreased; Light intensity is less (when distance of lamp is increased); So rate of photosynthesis is less	[3]	
	(iii)	30 cm	[1]	
	(iv)	To allow equilibration/to get steady stream/rate of bubbles/to adjust to that light intensity	[1]	
	(b) (i)	A: improve accuracy; B: improve reliability/get an average/spot anomalous results	[2]	
	(ii)	So rate of photosynthesis not affected by heat from the lamp/so light is the only factor (affecting photosynthesis)/so temperature will not affect photosynthesis	[1]	
6	(a)	A: glucose/sugar B: starch C: protein	[3]	6
	(b) (i)	Boiling/heat; in a water bath/beaker of water	[2]	
	(ii)	Blue to brick red (orange/yellow/green)	[1]	
7	(a) (i)	Phototropism/tropism	[1]	7
	(ii)	Auxin	[1]	
	(iii)	More light; for more photosynthesis (more must be once)	[2]	
	(b)	Area 2: same as cell in Area 1 (exactly same) Area 3: longer Area 4: longer or same as cell in Area 1 but not as long as cell in Area 3	[3]	

			AVAILABLE MARKS	
8	(a) (i)	Any two from: Biological catalyst; speeds up the rate of a reaction; protein	[2]	10
	(ii)	Small intestine/ileum/pancreas	[1]	
	(b)	Any two from: Small molecules/soluble molecules; To allow absorption into the bloodstream /blood/capillary	[2]	
	(c) (i)	Alkali tube stayed/remained cloudy	[1]	
	(ii)	– Albumin broken down/digested; – Enzyme active site is the correct shape/complementary (to substrate)/ albumin fits into the enzyme/lock and key/optimum pH/best pH	[2]	
	(iii)	– Albumin not broken down/digested; – Enzyme changes shape/denatured/damaged/incorrect shape/ albumin will not fit enzyme/lock and key doesn't work/ not at optimum pH	[2]	

9 (a) Indicative content

- Use a quadrat;
- Placed in a line/along a belt/transect/random placement;
- Move quadrat/place at different distances;
- Use a key/identification book/identify barnacle species;
- For each quadrat estimate percentage cover/count the number of barnacles of **each** species (not the number of species);
- Record results/data;
- Repeat/replicate whole experiment

[6]

**AVAILABLE
MARKS**

Response	Marks
Candidates use appropriate terms throughout in describing the sampling 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 sampling 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 sampling process. They use limited spelling, punctuation and grammar and have made little use of specialist terms.	[1]–[2]
Response not worthy of credit.	[0]

- (b) (i)** 50 species **A** present at 0 m; (at water’s edge);
 No species **A** at 25 m/only 2 at 20 m/none at furthest point
 Any **two** correct pieces of evidence

[2]

- (ii)** 2 and 48; [1] for reading graph
 4; 96; [1] each for doubling
 4 and 96 [3]

[3]

11

Total

70