Rewarding Learning

General Certificate of Secondary Education
2013–2014

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]

TUESDAY 13 MAY 2014, 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.

				AVAILABLE MARKS
1	**(a)**	sugar present; protein present; vit C absent	[3]	

Present	Absent
✓	
✓	
	✓

(b) add Benedicts; heat [2] 5

2 **(a)** **(i)** Any **two** from:
- large surface area
- thin barrier/wall is one cell thick/thin
- moist
- permeable
- good blood supply/good diffusion gradient/lots of capillaries [2]

(ii) **more** oxygen
less CO_2 [2]

(b) oxygen
carbon dioxide **and** water [2] 6

3 **(a)** **(i)** 100 – 79 = 21; 21/3 = 7 (7% = 2 marks) [2]

(ii) 7 × 7; ÷ 100; = 0.49
Apply CM from (i) [2]

(b) too much fast food/too much food/lack of activity [1]

(c) CHD/strokes/high blood pressure/diabetes/joint problems [1] 6

4 **(a)** **(i)** A – photosynthesis
B – feeding/eating/ingestion/consumption
C – respiration [3]

(ii) bacteria/fungi/microbe/decomposer/micro-organism [1]

(b) **(i)** **less** sun's radiation escapes/**more** trapped in atmosphere/**less** heat escapes/**more** heat reflected;
Earth heats up/temp rises [2]

(ii) flooding/(polar) ice caps melt/desertification/extreme weather/drought/rising sea levels/more storms/loss of habitat [1]

(iii) may affect economy/jobs/development of the country/cost of alternative fuels/country may not have alternative/renewable fuels [1] 8

					AVAILABLE MARKS
5	**(a)**	**(i)**	eating /meal/drinking	[1]	
		(ii)	3 times	[1]	
		(iii)	liver	[1]	
		(iv)	glucose converted to glycogen; increased respiration of glucose	[2]	
	(b)	**(i)**	diabetes	[1]	
		(ii)	lack of exercise/too much sugar in diet	[1]	
	(c)	**(i)**	auxin	[1]	
		(ii)	arrow pointing to left towards the shoot tip	[1]	
		(iii)	Any **three** from: • **more** hormone on left hand side/side away from light/shaded side • causes **cells** to elongate more (on l.h.s.); • causes tip to grow/bend towards light	[3]	12
6	**(a)**	**(i)**	sun/sunlight	[1]	
		(ii)	chlorophyll	[1]	
	(b)	**(i)**	177 – 117 = 60	[1]	
		(ii)	highest rate of photosynthesis/maximum yield; as both light **and** carbon dioxide were increased	[2]	
		(iii)	temperature/water/minerals/named mineral/soil pH	[1]	
		(iv)	cost of increased CO_2 /cost of lighting/cost of other named factor	[1]	7

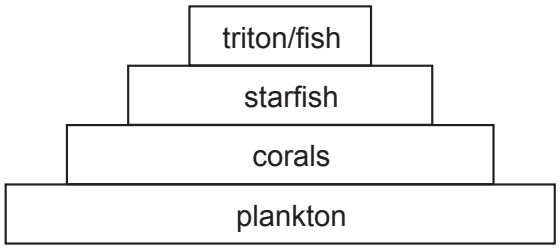
AVAILABLE MARKS

7 **(a)** (**different**)/(all) **types** of living organisms/**types** of animals and plants/ **variety** of living organisms/**number** of species [1]

(b) temperature [1]

(c) **(i)** plankton → (corals) → starfish → triton/fish (in correct places); arrows correct [2]

(ii)



1 shape and symmetrical and must be largest at bottom;
1 plankton at bottom, largest and labelled;
1 coral, starfish and triton/fish in correct order [3]

(d) **(i)** no photosynthesis/algae die;
less O_2 dissolved in water
reduced sugar or oxygen for respiration/less sugar or oxygen so cannot make skeletons/less sugar or oxygen so cannot grow [2]

(ii) species diversity/livelihood for people/fishing/protects land/ conservation/recreation/tourism/habitat for organisms/as a food source for other organisms/biodiversity/prevents extinction [1]

(iii) (water) pollution/sewage/silage/fertiliser/fishing boats/industrial waste/ divers/tourists/coral being collected [1]

(iv) indicator [1]

(e) **(i)** temperature probe/thermometer; [1]

(ii) increase reliability/obtain averages [1] 14

AVAILABLE MARKS

8 (a) (i) Any **two** from:
- so the molecules are soluble
- so that the molecules are small enough
- to be absorbed (into the blood)/pass into the blood [2]

(ii) protease;
amino acids [2]

(iii) Any **two** from:
- long
- large surface area
- villi/folds/microvilli
- thin (epithelial layer)/1 cell thick
- good blood supply/**lots of** capillaries
- lacteal
- permeable [2]

(b) Indicative content
- carry out with both tissues/carry out with potato and liver
- count bubbles/collect gas/measure foam or described/volume of gas
- in a given time
- repeat for reliability/repeat to get averages
- same weight/mass/amount of tissue in each/same temperature/ same pH add same volume of H_2O_2 /same concentration of H_2O_2
- wear goggles/wear gloves [6]

Response	Marks
Candidates use appropriate terms throughout to give at least three points about how to carry out the experiment giving one variable to be controlled and one safety point about how to carry out the experiment. They use good spelling, punctation and grammar. 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, punctation 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

12

Total **70**