Rewarding Learning

General Certificate of Secondary Education
2013

Biology

Unit 1

Foundation Tier

[GBY11]

WEDNESDAY 5 JUNE, 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)**	A – photosynthesis; B – feeding; C – fossilisation;	[1] [1] [1]	
	(b)	(Increased) burning of fossil fuels/combustion; Accept: Combustion (and respiration) greater than photosynthesis/more deforestation;	[1]	4
2	**(a)**	Add Benedict's solution; Boil/heat (in waterbath);	[1] [1]	
	(b)	Blue; To brick red;	[1] [1]	4
3	**(a)**	**(i)** **Y** contains higher concentration/amount of vitamin C;	[1]	
		(ii) **Y** has larger **circle** of **clear** agar;	[1]	
		(iii) Any **two** from **DCPIP** blue; Vitamin C **decolourises**/**makes** DCPIP go clear; Vitamin C moves out by diffusion; From high vitamin C concentration to a low vitamin C concentration/down concentration gradient;	[2]	
	(b)	Control/comparison/fair test;	[1]	5

4 Indicative content:

1. Place in dark/cupboard for 48 hours;
2. To destarch (leaf);
3. Cover part of leaf with card;
4. Expose to light;
5. Test leaf for starch/described;
6. Using iodine (solution);
7. Under card yellow/no colour change (shows no starch);
8. Light blocked by card so no photosynthesis;
9. Other parts blue-black (shows starch/photosynthesis);

Response	Marks
Candidates **must use** appropriate, **specialist terms** throughout to describe the movement of CO_2 into the site of photosynthesis **using at least five of the above points**. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
Candidates use **some appropriate**, **specialist terms** throughout to describe the movement of CO_2 into the site of photosynthesis **using at least three of the above points**. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates make **little use of specialist terms throughout** to describe the movement of CO_2 into the site of photosynthesis **using some or all of the above points**. The spelling, punctuation and grammar, form and style are of a **limited** standard.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] — AVAILABLE MARKS: 6

5 (a) (i) (Body) cells; [1]

(ii) Oxygen/O_2; [1]
Water/H_2O; [1] [2]

(iii) Movement/growth/reproduction/heat/active transport; [1]

(b) (i) 10240; [1]
216; [1] [2]

(ii) As the mass of animal **decreases** energy used (per kilogram) of body mass **increases**; **Accept** converse [1]
As the mass of animal **decreases** total energy used per day **decreases**; **Accept** converse [1]

AVAILABLE MARKS: 8

6 (a) **A** – cornea; [1]
B – pupil; [1]
C – vitreous humour; [1]

(b) **Iris** – Adjust size of **pupil**; [1]
Control amount of light entering; [1]
Lens – Any **two**
Changes thickness/shape; [1]
Focus/bends (light) onto **retina**; [1]
Retina – Senses light; [1]

AVAILABLE MARKS: 8

					AVAILABLE MARKS
7	**(a)**	**(i)**	A – Cytoplasm;	[1]	
			B – Vacuole;	[1]	
		(ii)	D;	[1]	
			E;	[1]	
	(b)	**(i)**	Plasmids;	[1]	
		(ii)	Cell wall not cellulose/no nucleus;	[1]	
	(c)		Probiotics lower pH/make ileum(/intestine) more acidic;	[1]	
			(Acid conditions) **kills/slows down the reproduction** of Salmonella bacteria;	[1]	
			Probiotics increase thickness of mucus;	[1]	
			Salmonella bacteria get trapped in mucus/stuck in mucus;	[1]	10
8	**(a)**		A – Intercostal (muscle);	[1]	
			B – Bronchus;	[1]	
			C – Diaphragm;	[1]	
			D – Alveolus;	[1]	
	(b)		(36–21);	[1]	
			15;	[1]	
			Accept: correct calculation which uses ECT [= 1 mark]		
	(c)		**No mark for correct identification of Mark**		
			Mark has **lower** breathing rate at rest;		
			Smallest increase in breathing rate while exercising/from 17 to 26;	[1]	
			Fastest recovery/return to resting breathing rate/10 to12 min;	[1]	
			From 17 breaths per minute to 26 breaths per minute (compared to 21 breaths per minute to 36 breaths per minute);	[1]	
	(d)		Count breaths **per minute/every minute**;	[1]	
			During rest, (5 minutes) exercise **and** recovery;	[1]	
			Maximum of two from		
			2 pupils;		
			Repeat (3 times)/calculate average;		
			Appropriate control described;	[2]	
	(e)		More required only once		
			(during exercise/at **8 mins**) **less**/decreased O_2 **exhaled**/**more** O_2;		
			absorbed/uptake/passes into blood/transported to muscles;	[1]	
			(during exercise/at **8 mins**) **more** respiration/energy production by contracting muscle	[1]	15
9	**(a)**		Any **two** from		
			Carbon/C, Hydrogen/H, Oxygen/O;	[1]	
	(b)		Milk/dairy produce/named example;	[1]	
			Vitamin;	[1]	
			Iron;	[1]	4

			AVAILABLE MARKS
10	**(a)** Any **two** from: Producer; Make own food/photosynthesis/absorb (use) energy from the sun; Provide food energy **for** rest of food web/consumers/chain/animals; [2]		
	(b) Energy flow; consumption/feeding/transfer of elements (C/N); [1]		
	(c) **Stoats** have more food; [1] Number of stoats increases; [1] [2]		5
11	**(a)** Auxin; [1]		
	(b) **(i)** More chemical/auxin on shaded side/dark side; [1]		
	(ii) Longer **cells**; [1]		
	(c) More light absorbed; } Require "more" only once [1] (More) photosynthesis/more/faster growth; } [1] [2]		5

12 Indicative content:

1. Mass of **substrate** broken down/used up by enzyme **A** (increases with time);
2. No **substrate** broken down/used up by enzyme **B**;
3. Lock and key model;
4. Substrate fits/complementary to **active** site of **A**;
5. Substrate does not fit/complementary to **active** site of **B**;
6. Enzymes are specific;
7. Increased/greater rate of **reaction rate** in **A**;
8. Enzymes are proteins/biological catalyst;

Response	**Marks**
Candidates **must use** appropriate, **specialist terms throughout** to explain the shape of the graph **using at least five of the above points**. They use **good** spelling, punctuation and grammar and the form and style are of a **high standard**.	[5]–[6]
Candidates **use some** appropriate, **specialist terms throughout** to explain the shape of the graph **using at least three of the above points**. They use **satisfactory** spelling, punctuation and grammar and the form and style are of a **satisfactory standard**.	[3]–[4]
Candidates **make little use of specialist terms throughout** to explain the shape of the graph **using at least one of the above points**. The spelling, punctuation and grammar, form and style are of a **limited standard**.	[1]–[2]
Response not worthy of credit**.**	[0]

[6] 6

Total **80**