Rewarding Learning

General Certificate of Secondary Education
2017

Biology

Unit 1

Foundation Tier

[GBY11]

FRIDAY 9 JUNE, 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)	**A** – Photosynthesis; [1] **B** – Respiration; [1] **C** – Fossilisation; [1] [3]	
	(b)	Fungi [1]	4
2		Optic nerve; [1] Iris; [1] Conjunctiva; [1] Retina; [1] [4]	4
3	(a)	Diffusion; [1] High; + Low; [1] Randomly; [1] [3]	
	(b)	Faster/shorter/decreased time [1]	4
4	(a)	**A** – Cuticle; [1] **B** – Air space; [1] **C** – Chloroplast; [1] [3]	
	(b)	Transparent upper epidermis → Allows maximum light into leaf; [1] Stoma in lower epidermis → Allows gas exchange into and out of leaf; [1] Thin leaf → Short distance for gases to exchange; [1] [3]	6
5	(a) (i)	Oxygen; [1] Water; [1] [2]	
	(ii)	Any **two** from: • Heat • Movement; • Growth; • Reproduction; • Active transport [2]	
	(b) (i)	Control; [1]	
	(ii)	Carbon dioxide produced/higher than normal; [1] by insect; [1] respiration; [1] [3]	8
6	(a)	Colour at start/initial colour; [1] Purple/lilac/mauve; [1] Blue; [1] Brick red (precipitate); [1] Blue; [1] White (emulsion); [1] [6]	
	(b) (i)	A and B; [1]	
	(ii)	C; [1]	8

					AVAILABLE MARKS
7	(a)	(i)	**A** – Plant; [1] **B** – Animal; [1]	[2]	
		(ii)	Nucleus;	[1]	
	(b)		**B** – cell wall; [1] permanent vacuole; [1] chloroplasts; [1]	[3]	
	(c)		(50 000 × 2) ÷ 500; [1] 200 (micrometres); [1]	[2]	
	(d)	(i)	Viruses are not made of cells;	[1]	
		(ii)	Viruses contain genetic material;	[1]	10
8	(a)	(i)	Volume decreases; [1] Pressure increases; [1]	[2]	
		(ii)	Ribs move down and in; Bell jar does not move;	[2]	
	(b)	(i)	Plots (× 2); [2] Line; [1]	[3]	
		(ii)	Breathing rate increases (for 1st 20 minutes); [1] Then levels off (at maximum of 43 beats per minutes); [1]	[2]	
		(iii)	18 minutes;	[1]	
		(iv)	Any **two** from: Breathing rate caused by running always higher than that caused by sit-ups/maximum breathing rate highest when running; [1] breathing rate while running levels off; sit-ups does not [1] breathing rate for running increases faster;	[2]	
		(v)	More oxygen needed/more CO_2 produced; [1] For respiration (of muscles); [1]	[2]	
	(c)	(i)	6;	[1]	
		(ii)	Training **increases** total volume of air breathed per minute;	[1]	16
9			Sugar/glucose; [1] Energy/respiration; [1] Fatty acids **and** glycerol; [1] Amino acids; [1]	[4]	4

	AVAILABLE MARKS

10 (a) Producers; [1]
Use (trap/absorb) energy from sunlight/photosynthesis; [1]
Provide food/energy for animals in food web; [1] [3]

(b) Field mice decrease; [1]
More eaten by hawk, fox and weasel; [1] [2]
or
Field mice increase; [1] **or** Field mice numbers stay the same; [1]
More food/plants to eat; [1] More food, but more predation; [1] 5

11 (a) Phototropism; [1]

(b) Uneven distribution of auxin/described; [1]
Auxin causes cell growth (more on one side)/described; [1] [2]

(c) More light/greater surface area exposed to light; [1]
More photosynthesis/growth; [1] [2] 5

12 Indicative Content

1. colour change in tube A to yellow/brown;
2. shows amylase breaks down starch (into simple sugars);
3. amylase has active site shape that fits (/complementary) with starch;
4. (amylase) forms enzyme substrate complex;
5. lipase/protease/tube B remain blue/black/shows starch still present/not digested
6. lipase/protease have (active site) different shape/does not fit starch;
7. result demonstrates enzyme specific(ity);
8. Appropriate reference to lock and key model;

Accept: bullet points which start with capital letter, contain a verb and end in full stop as sentences. 6

Band	Response	Mark
A	Candidates **must use appropriate, specialist terms** throughout **using at least 5 of the points**. They use **good** spelling, punctuation and grammar and the form and style are of a **high standard**.	[5]–[6]
B	Candidates use **some appropriate, specialist terms** throughout **using at least 3 of the points**. They use **satisfactory** spelling, punctuation and grammar and the form and style are of a **satisfactory standard**.	[3]–[4]
C	Candidates make **little use of specialist terms** throughout **using at least 1 of the points**. The spelling, punctuation and grammar, form and style are of a **limited standard**.	[1]–[2]
D	Response not worthy of credit.	[0]

Total **80**