



Rewarding Learning

General Certificate of Secondary Education

Biology

Unit 1

Higher Tier

[GBL12]

Assessment

**MARK
SCHEME**

General Marking Instructions

The main purpose of the mark scheme is to ensure that each question is marked accurately, consistently and fairly.

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which students may produce. In the event of unanticipated answers, teachers and lecturers are expected to use their professional judgement to assess the validity of answers.

Mark Scheme Annotation

- The use of a solidus (/) denotes alternative answers which can be awarded within the same question (or marking point in a question worth more than one mark).
- The use of a semi-colon (;) denotes separate marking points. These are particularly relevant when separating the different marking points in a question worth more than one mark.
- Part of an answer within brackets indicates that this part is not essential to gain credit – the bracketed section is usually to set context or for the purpose of completeness.
- Some answers are shown as 'Any **two** from' (or any number between two and six). This means that any two (or other specified number) answers from the bullet-pointed list can be credited in this question or question part.

Marking Calculations

Full marks are normally awarded for the correct answer – irrespective of whether working out has been shown (even when asked to show working out.) The principle of 'error carried forward' (ECF) usually applies in that if a student makes a mistake in the first part of a three-mark, three-stage calculation then the final two marks can be awarded if the second and third stage processes are carried out correctly. The same principle applies to a mistake at any stage in a calculation.

Marking QWC question

See guidance in the mark scheme at the QWC question and also the section in the subject-specific guidance.

			AVAILABLE MARKS	
1	(a) (i)	Nitrogen;	[1]	5
	(ii)	Different diet/different foods eaten;	[1]	
	(b)	Chicken; contains most nitrogen/rice needs most nitrogen;	[2]	
	(c)	Needed to make amino acids/proteins;	[1]	
2	(a)	2;	[1]	10
	(b)	Small fish;	[1]	
	(c) (i)	1600 – 75; = 1525;	[2]	
		(ii)	Any two from: excretion, movement, heat/respiration, inedible parts;	
	(d) (i)	(15000 ÷ 90000) × 100; = 16.66; 16.7;	[3]	
		(ii)	Not enough energy remaining to support a 5th trophic level;	
3	(a)	Meristems/apices;	[1]	5
	(b) (i)	Any two from: Bone marrow/umbilical cord/embryo;	[2]	
		(ii)	Similarity: cells divide/mitosis/differentiate; Difference: plant stem cells can redifferentiate; human stem cells cannot redifferentiate;	
4	(a)	It is a root cell/plane of section;	[1]	5
	(b)	60 mm = 60 000 micrometres; 60 000 ÷ 15; ×4000;	[3]	
		(c)	Ability to see fine detail;	

			AVAILABLE MARKS		
5	(a)	Arrow pointing left to right/—→;	[1]	6	
	(b)	Transmitter; synapse; diffuses; concentration; electrical;	[5]		
6	(a)	(i) Line drawn between X and Y pushed up;	[1]	13	
		(ii) Decreased volume; increased pressure;	[2]		
		(iii) Intercostal muscles relax; ribs move down and in; the model does not move;	[3]		
	(b)	(i) A – trachea/ring of cartilage; B – bronchus;	[2]		
		(ii) Pleural; reduce friction during breathing;	[2]		
		(iii) Smaller lung/reduced SA/fewer alveoli;	[1]		
		(iv) Any two from: difficulty breathing/less air enters lung/shortness of breath; less oxygen diffuses into blood/less gas exchange;	[2]		
7	(a)	(i) Cytoplasm;	[1]		10
		(ii) Respiration;	[1]		
	(b)	(i) A has more of each mineral than B; (Accept converse) both plants have most nitrates/least magnesium;	[2]		
		(ii) More mitochondria in plant A; 29 v 11; more respiration/energy (in A); for active transport; Mg 14 v 5 or Ca 15 v 6 or nitrate 24 v 9;	[4]		
		(iii) Calcium – make cell walls; magnesium – make chlorophyll;	[2]		

- 8 (a) (i) 8;
3 : 1; [2]
- (ii) As the size of the organism increases, the SA : Volume decreases;
6 : 1 vs 2 : 1; [2]
- (b) (i) Alveoli; [1]
- (ii) Small surface area to volume ratio/cells far away from surface;
diffusion too slow; [2]
- (iii) Some cells are far away from the lungs;
oxygen must be carried to them; [2]

AVAILABLE
MARKS

9

9 (a) (i) Indicative content:

Change:

- Increases/layer of gases becomes thicker;

How change affects global temperatures:

- Less heat energy can escape back into space/heat energy is reflected back to earth;
- Global temperature increases;

Causes:

- Deforestation;
- Combustion of fossil fuels;

Band	Response	Mark
A	Candidates must use appropriate, specialist terms throughout to describe and explain their conclusions 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 to describe and explain their conclusions 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 to describe and explain their conclusions 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]

[6]

(ii) Any **two** from:

Ice caps melt/rising sea levels/flooding/loss of habitats;

[2]

- (b) (i) 0.6;
 ÷ 20.6;
 2.9%;

[3]

(ii) Reforestation/international treaties/renewable energy (described);

[1]

12

Total

75

AVAILABLE
MARKS