



Rewarding Learning

General Certificate of Secondary Education

Biology

Unit 3 Practical Skills

Booklet B

Foundation Tier

[GBL32]

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) Forceps; microscope slide; stain; coverslip; [4]	8
		(ii) prevents damage to the lens/easier to locate the cells/easier to focus; [1]	
		(iii) so light can pass through the layer of cells; [1]	
	(b)	Nucleus; controls cell activities/contains chromosomes or DNA; [2]	
2	(a)	Length of potato cylinder; mm; 5; 46; [4]	9
		(b) (i) Line labelled X drawn to cell wall; [1]	
		(ii) Turgid; [1]	
		(iii) Smaller vacuole; Cell membrane pulled away from cell wall; Nucleus in correct position; [3]	
3	(a)	(i) (Mass/weight) potometer; [1]	16
		(ii) To prevent evaporation of water from the flask ; [1]	
	(b)	(i) Use a fan; [1]	
		(ii) Time/days; accurate plots (–1 for each incorrect plot) ×2; line drawn through points; [4]	
		(iii) Shoot takes up water; water was lost from the <u>leaves</u> ; transpiration/diffusion/evaporation; [3]	
		(iv) Wind increases mass lost by flask; steeper line/gradient/compare data, e.g. 12 g vs 48 g; [2]	
		(v) Any two pairs: Light; shoot is kept in dark conditions; temperature; shoot is placed in warm or cool position; humidity; shoot is covered by plastic bag; [4]	

- 4 (a) (i) Bacteria; fungi; [2]
- (ii) Extracellular; [1]
- (iii) Humus; [1]
- (b) (i) Between 5 and 10 days; 10 °C; [2]
- (ii) $30 \div 15$; 2; [2]
- (iii) Any **two** from:
Closer to optimum temperature;
more kinetic energy;
more collisions between enzyme and substrate molecules; [2]

AVAILABLE
MARKS

10

5 (a) **Indicative content:**

1. Wash/disinfect hands/bench;
2. To prevent contamination of plate/entry of microorganisms;
3. Work near a lit Bunsen;
4. To kill microorganisms in the air;
5. Open Petri dish lid at 45°;
6. To prevent entry of microorganisms;

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]

- (b) C; **Biggest** clear area;
killed **most** bacteria;
needs comparison [3]

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			AVAILABLE MARKS
6	(a) More reliable results/reduce anomalies;	[1]	6
	(b) D;	[1]	
	(c) (i) Distance the ruler travelled before being caught decreased with each test; 195 – 120 mm, then 120 – 90 mm;	[2]	
	(ii) C; anomalous result or described/110 – 300 mm;	[2]	
7	(a) Removed all the oxygen/sterilised; so the yeast were not killed;	[2]	12
	(b) Anaerobic;	[1]	
	(c) (i) Carbon dioxide/CO ₂ ;	[1]	
	(ii) Hydrogencarbonate indicator; red; yellow;	[3]	
	(d) Any three from: more bubbles; more yeast/cloudy; warmer; more alcohol; the mass of glucose decreased;	[3]	
	(e) When mass of glucose increased from 20 g to 25 g; maximum number of bubbles remained at 22/levels off at 22;	[2]	
		Total	70

