

Markscheme

May 2026

Biology

Standard level

Paper 1B

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Subject Details: Biology SL Paper 1B Markscheme

Candidates are required to answer **all** questions in Paper 1B. Maximum total = **25 marks**.

1. A markscheme often has more marking points than the total allows. This is intentional.
2. Each marking point has a separate line and the end is shown by means of a semicolon (;).
3. An alternative answer or wording is indicated in the markscheme by a slash (/). Either wording can be accepted.
4. An alternative answer is indicated by “**OR**”. Either answer can be accepted.
5. An alternative markscheme is indicated under heading **ALTERNATIVE 1** etc. Either alternative can be accepted.
6. Words in brackets () in the markscheme are not necessary to gain the mark.
7. Words that are underlined are essential for the mark.
8. The order of marking points does not have to be as in the markscheme, unless stated otherwise.
9. If the candidate’s answer has the same “meaning” or can be clearly interpreted as being of equivalent significance, detail and validity as that in the markscheme then award the mark. Where this point is considered to be particularly relevant in a question it is emphasized by **OWTTE** (or words to that effect).
10. Remember that many candidates are writing in a second language. Effective communication is more important than grammatical accuracy.
11. Occasionally, a part of a question may require an answer that is required for subsequent marking points. If an error is made in the first marking point then it should be penalized. However, if the incorrect answer is used correctly in subsequent marking points then **follow through** marks should be awarded. When marking indicate this by adding **ECF** (error carried forward) on the script.
12. Do **not** penalize candidates for errors in units or significant figures, **unless** it is specifically referred to in the markscheme.

Question			Answers	Notes	Total
1.	a		plant cell wall is made of <u>cellulose</u> whereas a fungal cell wall is made of <u>chitin</u> ;	<i>Must name both substances for the mark.</i> <i>Do not allow 'only the plant cell wall is made of cellulose'.</i> <i>Do not accept answers where additional incorrect information is given e.g 'fungal cell wall is made of chitin and cellulose'.</i>	1
1.	b		a. place (the onion sample) on <u>slide</u>; b. add water/(named)stain/dye/iodine solution (on the onion); c. add cover slip/thin piece of glass/OWTTE;	<i>Mp b: Accept another example of stain.</i> <i>Do not accept 'soak in water' or similar responses.</i> <i>Mp c: Do not accept another slide as a coverslip.</i> <i>Do not accept answers referring to viewing the mount under the microscope.</i>	3
1.	c		<u>180</u> ;	<i>Calculation is (100/40) x 72.</i>	1

Question			Answers	Notes	Total
2.	a	i	a. uses more data (points) / is more representative/actual/true/real measurement of beats per minute; b. (counting) errors are magnified less / errors have less impact/effect; c. pulse rate is not constant / can vary over 1 minute;	<i>Accept vice versa</i> <i>Mp a:</i> <i>Do not accept 'A more repetitions/repeats'.</i> <i>Do not accept 'A measured for a longer time' alone.</i> <i>Do not accept 'more accurate' without a reason for student A.</i> <i>Mp b:</i> <i>Do not accept 'less errors' alone for student A.</i> <i>Do not accept 'it is an estimation' alone for student B.</i>	1 max
2.	a	ii	a. less subjective / is objective / does not rely on human judgement / less chance of miscounting/mistakes / avoid confusion with own pulse; b. can take continuous readings/see patterns; c. it has sensors/is more sensitive (to measure the heart rate);	<i>Mp a: OWTTE</i> <i>Do not accept 'it is more accurate' unless a reason is given.</i>	1 max
2.	b		a. less blood/oxygen/glucose to heart/cardiac muscle; b. less/no respiration/ATP/energy produced; c. muscles/tissue/cells die/stop functioning; d. heart (muscle) contracts less/ does not contract/stops functioning OR heart attack / cardiac arrest / myocardial infarction;	<i>Mp a: Accept heart/cardiac tissues or cells. Do not accept 'to the heart' alone</i> <i>Mp c: Do not accept organ failure/death.</i> <i>Mp d: OWTTE, but do not accept CHD or stroke.</i>	3 max

Question			Answers	Notes	Total
2.	c		a. both indicators / BMI and WHR show <u>positive</u> correlation (with total blood cholesterol level); b. WHR has a stronger/greater/higher/better relationship/r value / more positive correlation; c. WHR is a better indicator (of total blood cholesterol); d. for both, the results are statistically significant / not due to chance (as the probability value is less than 0.05) OR there is a 95% probability that the results are significant; e. (no conclusion can be made as) correlation does not equal causation;	<i>Mark point a. is for saying both are positive and b. is about the strength of the correlation. They both may be included in one statement for 2 marks. e.g. 'WHR has a more positive correlation than BMI'.</i>	3 max
3.	a		a. respiration/seeds use/absorb/take in <u>oxygen</u>; b. there is a decrease of volume/pressure (in the tube, as the amount of gas decreases);	<i>Mp b: Ignore carbon dioxide.</i>	2
3.	b		(shows that) only the seeds/respiration are responsible for causing the results;	OWTTE <i>Accept reverse argument 'to show that respiration does not occur when no seeds are present'</i> <i>Do not allow 'for comparison' alone</i> <i>Allow examples of results, e.g. movement of the coloured liquid, change in pressure/volume/use of oxygen.</i>	1

Question			Answer	Notes	Total
3.	c		a. oxygen needed for aerobic but not anaerobic; b. aerobic produces a lot of ATP/releases a lot of energy whereas anaerobic produces only a little ATP/releases a little energy; c. <u>carbon dioxide</u> and <u>water</u> produced by aerobic whereas <u>lactic acid/lactate</u> produced by anaerobic; d. aerobic requires/occurs partly in <u>mitochondria</u> whereas anaerobic only occurs in the <u>cytoplasm</u>; e. aerobic can use many substrates/organic carbon sources whereas anaerobic only uses glucose/carbohydrate;	<i>Mp a: Distinction must involve both types of respiration, such as when they use “only”</i> <i>e.g Only aerobic requires oxygen.</i> <i>Mp b: Accept more ATP/energy produced by aerobic (per glucose). Accept numbers showing aerobic produces more.</i> <i>Mp c: Do not award the mark if additional incorrect products are given e.g lactate and carbon dioxide for anaerobic.</i> <i>Mp e: accept two or more substrates for aerobic, e.g. carbohydrates and fats.</i> <i>If the candidate writes out both equations correctly award a and c and additional marks if additional marking points included</i> <i>e.g of a specimen answer</i> <u>Aerobic</u> <i>glucose + oxygen → carbon dioxide +water + a lot of energy</i> <u>Anerobic</u> <i>glucose → lactic acid + a little energy</i> <i>This would be worth 3 marks for a. b. and c.</i> <i>By showing both equations, a distinction is implied.</i>	3 max

Question			Answers	Notes	Total
4.	a	i	polymerase chain reaction / PCR;		1
4.	a	ii	(gel) electrophoresis;		1
4.	b		a. C; b. has the DNA/fragments/bands/tandem repeats that the child did not receive from the mother OR has more matches with child;	<i>Mp b: Do not accept genes</i> <i>Mp b: If a. is incorrect marking point b. cannot be awarded.</i>	2
4.	c		a. (different) individuals may have same DNA/fragments/bands/tandem repeats (by chance); b. increases the chances of the results being valid (by having more measurements); c. reduces the possibility of a false positive/match;	<i>Mp a: Do not accept genes.</i>	2 max