

Markscheme

May 2026

Biology

Higher level

Paper 1B

© International Baccalaureate Organization 2026

All rights reserved. No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without the prior written permission from the IB. Additionally, the license tied with this product prohibits use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, whether fee-covered or not, is prohibited and is a criminal offense.

More information on how to request written permission in the form of a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organisation du Baccalauréat International 2026

Tous droits réservés. Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite préalable de l'IB. De plus, la licence associée à ce produit interdit toute utilisation de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, moyennant paiement ou non, est interdite et constitue une infraction pénale.

Pour plus d'informations sur la procédure à suivre pour obtenir une autorisation écrite sous la forme d'une licence, rendez-vous à l'adresse <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organización del Bachillerato Internacional, 2026

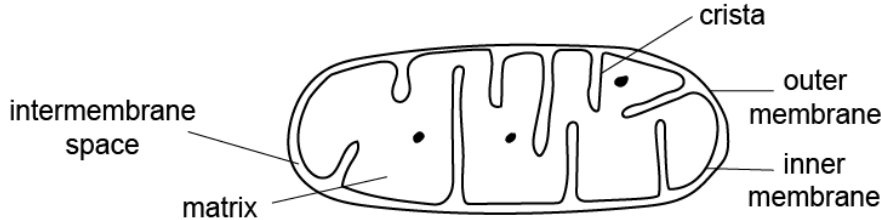
Todos los derechos reservados. No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin la previa autorización por escrito del IB. Además, la licencia vinculada a este producto prohíbe el uso de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales—, ya sea incluido en tasas o no, está prohibido y constituye un delito.

En este enlace encontrará más información sobre cómo solicitar una autorización por escrito en forma de licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

Subject Details: Biology HL Paper 1B Markscheme

Candidates are required to answer **all** questions in Paper 1B. Maximum total = **35 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	i	a. outer membrane; b. inner membrane; c. crista; d. matrix; e. intermembrane space; 	1 mark for each structure correctly drawn and labelled. Do not accept DNA (as not visible). Allow small circle labelled as a <u>70S ribosome/granule</u>.	3 max
1.	a	ii	mitochondrion has <u>70S</u> ribosomes but X/rough endoplasmic reticulum/rER has <u>80S</u> ribosomes OR ribosomes in mitochondrion are free, those labelled X are attached to rough endoplasmic reticulum/rER;		1
1.	a	lii	<u>Golgi</u> apparatus/body/complex OR vesicles;		1

Question			Answers	Notes	Total
1.	b		<i>Preparation [2 max]</i> a. place (the tissue) on <u>slide</u>; b. place a drop of water/stain/iodine solution (on the tissue) to make the tissue visible OR add iodine solution to stain/dye tissue; c. lower cover slip / thin piece of glass (at an angle) to avoid air bubbles; <i>Viewing [2 max]</i> d. place the slide on the microscope stage / under the lens; e. <u>coarse/fine</u> adjustment to focus OR start with objective lens of lowest magnification/power; f. adjust light intensity (for clear vision);	<i>As this is an “Explain” question, reasons need to be included, not simply a description.</i> <i>Mpb: Accept other stains.</i>	3 max

Question			Answers	Notes	Total															
2.	a	i	(143 – 118 =) 25 mm Hg;	Unit required. Allow 23-27mm Hg.	1															
2.	a	ii	similarity: a. both rise as exercise begins and decrease during <u>recovery</u> ; difference: b. (systolic) blood pressure begins to decrease as soon as exercise is reduced while heart rate continues to rise during reduced exercise/for 5 minutes after exercise reduced OR heart rate shows a sharper/larger increase/decrease than (systolic) blood pressure;	Ignore numerical values alone with no reference to exercise/recovery. Or vice versa.	2 max															
2.	a	iii	changes little during exercise as diastolic pressure is the pressure when the ventricles/heart (chambers/muscle) relax;		1															
2.	b	i	fenestrations;		1															
2.	b	ii	<table><tr><td></td><td>Arteries</td><td>Veins</td></tr><tr><td>a.</td><td>have thick walls</td><td>have thin walls;</td></tr><tr><td>b.</td><td>have narrow lumen</td><td>have wide lumen;</td></tr><tr><td>c.</td><td>have more elastic tissue/collagen/muscle</td><td>have less elastic tissue/collagen/muscle;</td></tr><tr><td>d.</td><td>do not have valves</td><td>have valves;</td></tr></table>		Arteries	Veins	a.	have thick walls	have thin walls;	b.	have narrow lumen	have wide lumen;	c.	have more elastic tissue/collagen/muscle	have less elastic tissue/collagen/muscle;	d.	do not have valves	have valves;	Answers do not need to be in a table but must make valid comparisons (thicker/thinner/more).	3 max
	Arteries	Veins																		
a.	have thick walls	have thin walls;																		
b.	have narrow lumen	have wide lumen;																		
c.	have more elastic tissue/collagen/muscle	have less elastic tissue/collagen/muscle;																		
d.	do not have valves	have valves;																		

Question			Answers	Notes	Total
3.	a	i	(positive) phototropism;		1
3.	a	ii	intact/untreated seedling with no plastic sheet inserted (also placed in the light);		1
3.	a	iii	a. auxin is produced in the tip (of A and B); b. (unilateral light causes) auxin to accumulate on the side away from the light; c. auxin moves down the stem by diffusion/active transport (from the tip); d. the sheet prevents movement in A but not in B; e. auxin causes cell elongation in B;		3 max
3.	b	i	a. the seedlings will bend/grow towards the right / the side without the block; b. the longer the time the tip was on the gelatin, the more the seedlings will bend/grow;		2
3.	b	ii	measure the angle of curvature;	<i>Accept angle of bending.</i>	1
3.	c		positive feedback OR ripening fruits produce more ethylene which causes further ripening;		1

Question			Answers	Notes	Total
4.	a	i	B, D, A, E, C;	<i>The correct order and all five letters are required to earn the mark.</i>	1
4.	a	ii	(late) anaphase;	<i>Allow telophase.</i>	1
4.	a	iii	metaphase;		1
4.	b		(0.25 x 160 =) 40;	<i>No working required.</i>	1
4.	c		a. cells from mitosis are diploid, meiosis haploid; b. 2 cells from mitosis, 4 from meiosis; c. identical cells from mitosis, (genetic) variation in meiosis;	<i>Mpb: Allow reference mitosis produces somatic cells and meiosis produces gametes/germ cells.</i>	2 max
4.	d		a. hermaphroditic plants have both male and female reproductive organs/structures; b. self-pollination/in-breeding decreases genetic diversity/variation; c. (mechanisms to) prevent self-pollination OR plants develop self-incompatibility; d. pollen/stigma matures at different times OR pollen grains fail to develop/form pollen tube if fall on stigma of same plant; e. promote cross pollination / adaptations for animals/wind to carry pollen between different plants; f. (carry out sexual reproduction even if self-pollinate) with formation of different gametes by meiosis / crossing over / independent assortment / fusing of gametes so offspring not identical to parent plant;	<i>Mpb: Allow reverse argument: cross-pollination increases genetic variation.</i> <i>Mpc: Accept genes for self-sterility present.</i>	4 max