

APOLLO

Inheritance

HL

Biology

First assessment 2025

10 questions | mark schemes

Mark-scheme answers

Biology HL | Paper 1A | May 2025 TZ1 | Q31 | 1 marks

31. C

Biology HL | Paper 1A | May 2025 TZ2 | Q31 | 1 marks

31. B

Biology HL | Paper 1A | May 2025 TZ2 | Q32 | 1 marks

32. D

Biology HL | Paper 1A | May 2025 TZ3 | Q31 | 1 marks

31. C

Biology HL | Paper 1A | Nov 2025 TZ1 | Q30 | 1 marks

30. C

Biology HL | Paper 1A | Nov 2025 TZ1 | Q31 | 1 marks

31. D

6.	a	a. correct genotypes of parents shown = BbGg and bbgg; b. correct gametes and genotypes of offspring (BbGg + Bbgg + bbGg + bbgg); <table border="1"> <tr> <td></td><td>BG</td><td>Bg</td><td>bG</td><td>bg</td></tr> <tr> <td>bg</td><td>BbGg</td><td>Bbgg</td><td>bbGg</td><td>bbgg</td></tr> </table> c. correct phenotypes - broad, green (leaves): broad, yellow (leaves): narrow, green (leaves): narrow, yellow (leaves);		BG	Bg	bG	bg	bg	BbGg	Bbgg	bbGg	bbgg	<i>For a. and b. do not accept other letters to represent alleles. Allow use of other letters as ECF for c. only.</i> <i>Accept other types of diagrams.</i> <i>For c. phenotype must match genotype of the offspring.</i>	3
	BG	Bg	bG	bg										
bg	BbGg	Bbgg	bbGg	bbgg										
6.	b	a. genes for leaf symmetry and colour are linked / on same chromosome / on chromosome 4; b. alleles of these genes fail to assort independently / L and G / l and g inherited together; c. low probability of recombinants being formed; d. recombinants can only occur through <u>crossing over</u>;	<i>For b. OWTTE.</i>	2 max										

Question	Answers	Notes	Total
----------	---------	-------	-------

Mark-scheme answers

Biology HL | Paper 1A | Specimen 2025 | Q31 | 1 marks

31. D

6.	a		a. pair of sex chromosomes / X and Y chromosomes; b. X and Y sperm produced in equal numbers; c. egg is X and if fertilized by X sperm leads to a female child; d. egg is X and if fertilized by Y sperm leads to a male child;		2
6.	b		a. sex cell normally contains one copy (of chromosome 21); b. (because of nondisjunction) fail to separate properly; c. in first or second meiotic division; d. sex cell contains two copies (of chromosome 21); e. this sex cell (with two copies) fertilizes normal sex cell (with one copy); f. non-disjunction (of chromosome 21) more frequent in females/increases with age;		3
6.	c		a. mostly males affected; b. sons of affected father are unaffected; c. sons of affected mother are affected;		2

Question	Answers	Notes	Total
----------	---------	-------	-------

7.	a		brown body vestigial wings AND black body, normal wings		1
7.	b		a. independent assortment predicts 1:1:1:1 OR this (mendelian) ratio not seen / recombinants less frequent/parental types more frequent; b. suggests linkage OR small numbers so could be a result of differential survival;		2
7.	c		a. calculate expected numbers; b. assume no selective advantage to any of the genotypes; c. calculate chi square value; d. (if tabulated value is exceeded then) significant difference/reject null hypothesis/alleles do not sort independently/alleles linked;		2