



**2008 Biology**

**Intermediate 2**

**Finalised Marking Instructions**

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## GENERAL MARKING ADVICE: BIOLOGY

The marking schemes are written to assist in determining the 'minimal acceptable answer' rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates' evidence, and apply to marking both end of unit assessment and course assessments.

1. There are no **half marks**. Where three answers are needed for two marks, normally one or two correct answers gain one mark.
2. In the mark scheme, if a word is **underlined** then it is essential; if a word is (**bracketed**) then it is not essential.
3. In the mark scheme, words separated by / are **alternatives**.
4. If two answers are given which contradict one another the first answer should be taken. However, there are occasions where the second answer negates the first and no marks are given. There is no hard and fast rule here, and professional judgement must be applied. Good marking schemes should cover these eventualities.
5. Where questions in data are in two parts, if the second part of the question is correct in relation to an incorrect answer given in the first part, then the mark can often be given. The general rule is that candidates should not be penalised repeatedly.
6. If a numerical answer is required and units are not given in the stem of the question or in the answer space, candidates must supply the units to gain the mark. If units are required on more than one occasion, candidates should not be penalised repeatedly.
7. Clear indication of understanding is what is required, so:
  - if a description or explanation is asked for, a one word answer is not acceptable
  - if the question ask for **letters** and the candidates gives words and they are correct, then give the mark
  - if the question asks for a word to be **underlined** and the candidate circles the word, then give the mark
  - if the result of a calculation is in the space provided and not entered into a table and is clearly the answer, then give the mark
  - **chemical formulae** are acceptable eg CO<sub>2</sub>, H<sub>2</sub>O
  - contractions used in the Arrangements document eg DNA, ATP are acceptable
  - words not required in the syllabus can still be given credit if used appropriately eg metaphase of meiosis.
8. Incorrect **spelling** is given. Sound out the word(s),
  - if the correct item is recognisable then give the mark
  - if the word can easily be confused with another biological word then **do not** give the mark eg ureter and urethra
  - if the word is a mixture of other biological words then **do not** give the mark, eg melluym, melebrum, amniosynthesis.

9. **Presentation of data:**

- if a candidate provides two graphs or bar charts (eg one in the question and another at the end of the booklet), mark both and give the higher score
- if the question asks for a line graph and a histogram or bar chart is given, then do not give the mark(s). Credit can be given for labelling the axes correctly, plotting the points, joining the points either with straight lines or curves (best fit rarely used)
- if the x and y data are transposed, then do not give the mark
- if the graph used less than 50% of the axes, then do not give the mark
- if 0 is plotted when no data is given, then do not give the mark (ie candidates should only plot the data given)
- no distinction is made between bar charts and histograms for marking purposes. (For information: bar charts should be used to show discontinuous features, have descriptions on the x axis and have separate columns; histograms should be used to show continuous features; have ranges of numbers on the x axis and have contiguous columns)
- where data is read off a graph it is often good practice to allow for acceptable minor error. An answer may be given  $7.3 \pm 0.1$ .

10. **Extended response questions:** if candidates give two answers where this is a choice, mark both and give the higher score.

11. **Annotating scripts:**

- put 0 in the box if no marks awarded – a mark is required in each box
- indicate on the scripts why marks were given for part of a question worth 3 or 2 marks. A ✓ or X near the answers will do.

12. **Totalling scripts:** errors in totalling can be more significant than errors in marking:

- enter a correct and carefully checked total for each candidate
- do not use running totals as these have repeatedly been shown to lead to more errors.

**2008 Biology Intermediate 2**

**Section A**

- |     |   |     |   |     |   |
|-----|---|-----|---|-----|---|
| 1.  | A | 11. | B | 21. | A |
| 2.  | C | 12. | C | 22. | B |
| 3.  | B | 13. | A | 23. | A |
| 4.  | C | 14. | D | 24. | D |
| 5.  | D | 15. | B | 25. | D |
| 6.  | C | 16. | B |     |   |
| 7.  | A | 17. | D |     |   |
| 8.  | A | 18. | C |     |   |
| 9.  | C | 19. | B |     |   |
| 10. | D | 20. | B |     |   |

Marking Instructions

Biology Intermediate 2 2008

Section B

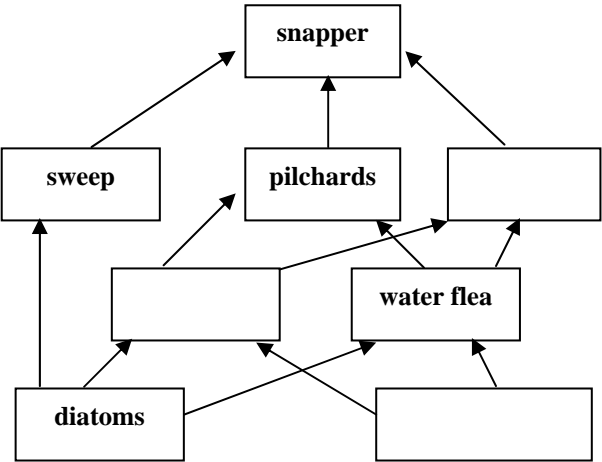
Question	Acceptable Answer		Mark	Unacceptable Answer	Negates
<p><b>1</b>      <b>(a)</b>      <b>(i)</b></p>	<i>Structure</i>	<i>Function</i>		<p>holds/stores/protects</p> <p>brain of cell/controls cell function</p>	
	<i>(cell) membrane</i>	controls the entry and exit of materials			
	cytoplasm	<i>site of chemical reactions/cell activities/division</i>			
	nucleus	<i>controls/stores genetic information/controls <u>cell</u> activities</i>			
	<p>3 = 2 marks 1/2 = 1 mark</p>		<b>2</b>		
	<b>(ii)</b> chloroplasts		<b>1</b>		
<b>(b)</b>	cellulose		<b>1</b>		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
2	<p>(a) oxygen</p> <p>(b) (i) ATP</p> <p>(ii) combines with carbon dioxide</p> <p>(c) (i) temperature affects the activity of <u>enzymes</u>; activity of <u>enzymes</u> affects the rate of photosynthesis/carbon fixation temperature dependent</p> <p>(ii) carbon dioxide (concentration)</p> <p>light (intensity)</p> <p style="text-align: right;"><b>both for mark</b></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>glucose</p> <p>to form glucose</p> <p>temperature</p>	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
<p><b>3</b>    <b>(a)</b>    <b>(i)</b></p>	<p>A    glucose  B    water  C    ADP</p> <p style="text-align: right;">3 = 2 marks  1/2 = 1 mark</p>	<p><b>2</b></p>		
	<p><b>(ii)</b>    muscular contraction/maintaining body temperature/cell division/transmission of nerve impulses/glycolysis/carbon fixation</p>	<p><b>1</b></p>	<p>respiration/diffusion/photosynthesis</p>	
	<p><b>(b)</b>    oxygen debt is repaid/(lactic acid is) converted into pyruvic acid</p>	<p><b>1</b></p>	<p>more oxygen available  (oxygen used) to breakdown lactic acid</p>	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
4 (a)	-15% (minus sign must be included)	1		
(b) (i)	sugar <u>concentration</u>	1	sugar solution	
(b) (ii)	Repeat the experiment (several times)	1	repeat it/test	
(b) (iii)	NOT VALID ticked <u>and</u> to prevent introducing another variable;  (to remove) excess/surface water which would affect mass/results	1	valid box ticked	
	<b>any 1 for 1</b>	1		
(c) (i)	C/D/E	1		
(c) (ii)	smaller/flaccid/softer/wrinkled/shrunken	1	plasmolysed decrease in mass	



Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
5 (a) (i)	 <p style="text-align: center;"> <b>5 correct names = 2</b>  <b>2/3/4 correct names = 1</b>  <b>1 correct name = 0</b> </p>	<p style="text-align: center;">2</p>		
(ii)	carnivore/predator/consumer (not primary)	1		primary
(b)	Effect: decrease Explanation: due to more pilchards and blenny to eat them <b>OR</b> due to more sweep so less diatoms as food	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p>	increase more predators	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
<b>6</b> <b>(a)</b> <b>(i)</b>	<p style="text-align: center;"> <b>x-axis label and scale</b>  <b>y-axis label and scale</b>  <b>correct bars plotted</b> </p>	<p style="text-align: center;"> <b>1</b>  <b>1</b>  <b>1</b> </p>	<p style="text-align: center;"> } Less than 50% of graph paper used.  Line graph </p>	
<b>(ii)</b>	(as the years pass) the catches fall/decrease	<p style="text-align: center;"><b>1</b></p>		
<b>(iii)</b>	936	<p style="text-align: center;"><b>1</b></p>		
<b>(b)</b>	1.25 times	<p style="text-align: center;"><b>1</b></p>		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates										
7	(a) (i) BB bb (wrong letters – no mark)	1												
	(ii) Bb (allow use of student's wrong letter – part (b) also)	1												
	(iii) blue	1												
	(b)	<table border="1" data-bbox="448 579 1010 687"> <tr> <td></td> <td>B</td> <td>b</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> <tr> <td>(b)</td> <td>(Bb)</td> <td>(bb)</td> </tr> </table>				B	b	b	Bb	bb	(b)	(Bb)	(bb)	
		B			b									
b	Bb	bb												
(b)	(Bb)	(bb)												
(or correct results from given wrong gametes) (or using wrong answers to a(i) and a(ii))														
	gametes	1												
	genotypes	1												

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
<p><b>8</b></p> <p><b>(a)</b></p> <p><b>(i)</b></p> <p><b>(ii)</b></p> <p><b>(b)</b></p>	<p>different foods/feed at different heights/only zebra can feed on grass (some comparison needed)</p> <p>long/deep roots/shallow/extensive roots/reduced leaf surface area/<u>thick waxy cuticle</u>/succulent tissue/needles/spines</p> <p style="text-align: right;"><b>any 1 = 1</b></p> <p>due to <u>very</u> high levels of grazing/overgraze/eat everything</p> <p>number of (grass) <u>species</u> reduced</p>	<p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p>	<p>reference to neck length only</p> <p>zebras also eat grass</p> <p>store water</p> <p>large roots</p> <p>number of plants decreased</p>	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
<p><b>9</b>    <b>(a)</b></p>	<p>X    tricuspid/AV  Y    (left) ventricle</p> <p style="text-align: right;"><b>both = 1</b></p>	<p style="text-align: center;"><b>1</b></p>		
<p><b>(b)</b></p>	<p>false    veins  false    capillaries  true</p>	<p style="text-align: center;"><b>1</b> <b>1</b> <b>1</b></p>	<p>alveoli</p>	
<p><b>(c)</b></p>	<p>red    high  lymphocytes</p>	<p style="text-align: center;"><b>1</b> <b>1</b></p>		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
10 (a) (i)	2.25 – 2.3	1	blood flows nearer to skin	motor neurones
	(ii) vasodilation/increased blood flow to skin/ increased heat loss/radiation sweating hairs lie flat any 2	2		
	(b) (i) hypothalamus	1		
	(ii) negative feedback	1		
	(iii) <u>sensory</u> nerves/neurones OR as electrical/nerve impulses	1		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
<b>11</b>	<b>(a) (i)</b> 80	<b>1</b>		
	<b>(ii)</b> none in renal vein/none reabsorbed high concentration in ureter	<b>1</b>	all removed any reference to volume	
	<b>(iii)</b> water	<b>1</b>		
	<b>(b)</b> Process 1 (ultra) filtration Process 2 reabsorption (or reverse order) OR – osmosis/active transport (any order)	<b>1</b> <b>1</b>	absorption	
	<b>(c)</b> Problem influx of water/water gain	<b>1</b>	fish/cell hypertonic too much water	drinks water
	Method produce large volume of urine/ dilute urine/increase filtration/ reduced reabsorption many (large) glomeruli	<b>1</b>	any mention of salt osmoregulation	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates									
<p><b>12</b> (a) (i)</p> <p>(ii)</p> <p>(b)</p>	<p>(A) hepatic portal vein</p> <p>(B) broken down to form <u>urea</u> OR deamination to form <u>urea</u></p> <p>(A) gall bladder</p> <p>(B) emulsifies fat/neutralise stomach contents</p> <table border="1" data-bbox="441 576 1032 716"> <thead> <tr> <th><i>Enzyme</i></th> <th><i>Substrate</i></th> <th><i>Product</i></th> </tr> </thead> <tbody> <tr> <td><b>Trypsin/ protease</b></td> <td>protein</td> <td><b>amino acids/ (poly) peptides</b></td> </tr> <tr> <td>amylase</td> <td><b>starch</b></td> <td>maltose</td> </tr> </tbody> </table> <p style="text-align: right;">3 = 2 1/2 = 1</p>	<i>Enzyme</i>	<i>Substrate</i>	<i>Product</i>	<b>Trypsin/ protease</b>	protein	<b>amino acids/ (poly) peptides</b>	amylase	<b>starch</b>	maltose	2	<p>deamination</p> <p>breaks down fats</p> <p>pepsin</p>	
<i>Enzyme</i>	<i>Substrate</i>	<i>Product</i>											
<b>Trypsin/ protease</b>	protein	<b>amino acids/ (poly) peptides</b>											
amylase	<b>starch</b>	maltose											





### Question 2A

- A1 yeast contains enzymes (for anaerobic respiration)  
A2 yeast ferment sugar/glucose present  
A3 carbon dioxide produced (which becomes trapped in the dough)  
A4 (CO<sub>2</sub>) makes dough/bread rise **max 2**
- A5 in the absence of oxygen  
A6 (first stage) glycolysis occurs  
A7 glucose converted into pyruvic acid(s)  
A8 pyruvic acid is broken down  
A9 to ethanol/alcohol and carbon dioxide  
A10 anaerobic conversion is irreversible  
A11 (glycolysis/glucose breakdown) produces 2 ATP  
A12 enzymes used for anaerobic respiration (Do NOT award if A1 given) **max 3**

**TOTAL 5 MARKS**

### Question 2B

- B1 (enzymes are) composed of proteins  
B2 (enzymes are) catalysts/speed up reactions/lower the energy required for a reaction to take place  
B3 (enzymes) can be reused/(enzymes) are unchanged in the reaction  
B4 they have an active site  
B5 specific substrate fits into enzyme/enzyme-substrate complex/lock and key/complementary/suitable labelled diagram/enzymes are specific or example  
B6 any correct point about temperature/pH affecting enzyme activity/structure **max 3**
- B7 glucose – 1 – phosphate/G – 1 – P is the substrate  
B8 starch is the product/is made  
B9 small/simple molecules to large/complex molecules **max 2**

(Suitable labelled diagrams or word equations may be acceptable)

**TOTAL 5 MARKS**

[END OF MARKING INSTRUCTIONS]