

2005 Biology

Intermediate 1

Finalised Marking Instructions

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments.

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 assessments 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. 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 on 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 questions ask for **letters** and the candidate 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 CO₂, H₂O
 - 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 term 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 mellum, 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 is 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 ± 0.1 .

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

11. **Annotating scripts:**

- put a 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 \surd or x near answers will do.

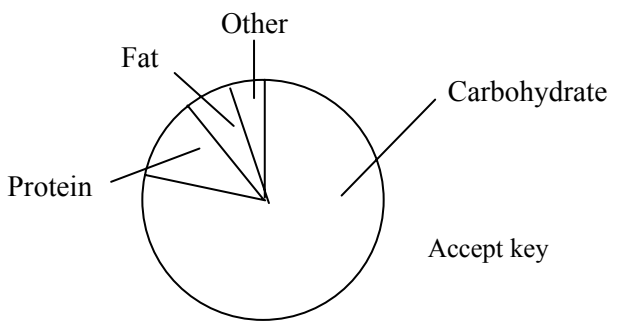
12. **Totalling scripts:** errors in totalling can be more significant than errors in marking:

- 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.

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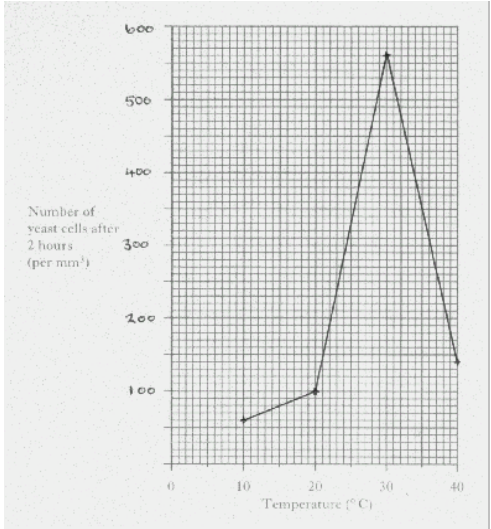
Section A

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

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
3 (a)	(Vitamins) D & K	1		Any other letter
(b)	Eggs	1		
(c)	(Vitamins) A & E	1		Any other letter
(d)	Concept needs <u>a lot of energy</u> /use a lot of energy and <u>vitamin B₁ releases energy</u> eg athletes need a lot of energy and Vit B ₁ releases it from food	1	Release energy Athletes need a lot of energy	Lot of energy in Vit B ₁ Vit B ₁ gives energy
4 (a)	 <p>Correct proportions = 1 Correct labels = 1</p> <p>Look as if lines are drawn with a ruler</p>	2	No 'daylight' at tick marks 2 lines to tick mark Label with letter (P, F, C) or number	
(b)	2 (Protein) : 1 (Fat)	1	10:5	

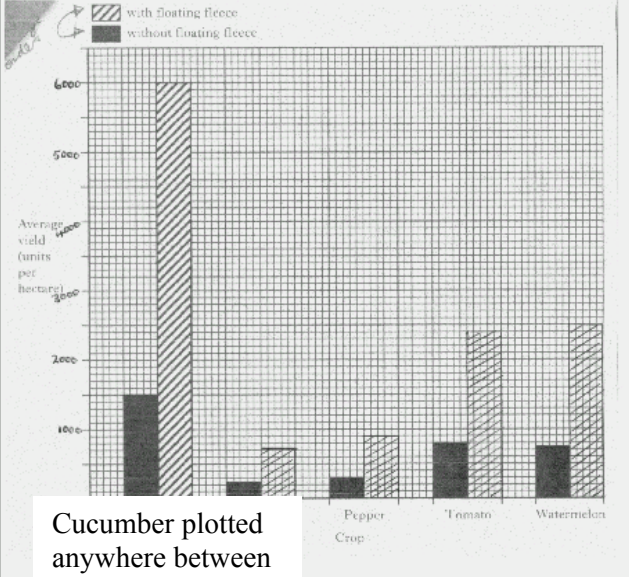
Question	Acceptable answers	Marks	Unacceptable Answer	Negates
5 (a)	temperature — finger and stopwatch body fat — clinical thermometer blood pressure — skin fold callipers heart rate — digital sphygmomanometer All correct = 2 2 or 3 correct = 1 0 or 1 correct = 0	2	2 lines from one measurement , lose mark for that measurement	
(b) (i)	(Digital) sphygmomanometer	1	Digital thermometer	
(ii)	More accurate/reliable/precise/quicker/easier/clearer reading/get exact result/easier to read	1	Never wrong Correct More correct Better result	
6 (a)	Hospital/household/farm/agricultural	1	Urine Faeces	
(b)	May damage the environment/lead to an increase in antibiotic resistance/example of how environment is damaged	1		
(c)	<u>Separation/removal</u> (techniques) on <u>urine</u> (of hospital patients)	1		
(d)	20%	1		

Question	Acceptable answers	Marks	Unacceptable Answer	Negates															
7 (a)	<table border="1" data-bbox="398 320 983 635"> <thead> <tr> <th data-bbox="398 320 640 352">Statement</th> <th data-bbox="640 320 810 352">Antibiotics</th> <th data-bbox="810 320 983 352">Antifungals</th> </tr> </thead> <tbody> <tr> <td data-bbox="398 352 640 443">Used to treat athlete's foot and thrush</td> <td data-bbox="640 352 810 443"></td> <td data-bbox="810 352 983 443">✓</td> </tr> <tr> <td data-bbox="398 443 640 507">Act on bacteria but not viruses</td> <td data-bbox="640 443 810 507">✓</td> <td data-bbox="810 443 983 507"></td> </tr> <tr> <td data-bbox="398 507 640 571">Limit growth of fungi</td> <td data-bbox="640 507 810 571"></td> <td data-bbox="810 507 983 571">✓</td> </tr> <tr> <td data-bbox="398 571 640 635">Produced naturally by soil fungi</td> <td data-bbox="640 571 810 635">✓</td> <td data-bbox="810 571 983 635"></td> </tr> </tbody> </table> <p data-bbox="562 671 808 767"> 4 rows correct = 2 2,3 rows correct = 1 0,1 row correct = 0 </p>	Statement	Antibiotics	Antifungals	Used to treat athlete's foot and thrush		✓	Act on bacteria but not viruses	✓		Limit growth of fungi		✓	Produced naturally by soil fungi	✓		2		Extra tick in a row loses mark for that row
Statement	Antibiotics	Antifungals																	
Used to treat athlete's foot and thrush		✓																	
Act on bacteria but not viruses	✓																		
Limit growth of fungi		✓																	
Produced naturally by soil fungi	✓																		
(b)	Fermenter	1																	

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
8 (a)	 <p data-bbox="638 895 1003 994">Scale = 1 (minimum of two scale points) Plotting & joining points = 1</p>	2	<p data-bbox="1144 400 1541 531">Plot to 0, – lose the plot mark If results plotted for number of yeast cells at start, lose plot mark only.</p> <p data-bbox="1144 568 1518 635">If wrong scale, can still get plot mark (if done correctly)</p> <p data-bbox="1144 671 1442 738">Bar graph lose plot mark Line of best fit</p>	
(b) (i)	30°C	1		
(ii)	Same <u>number/amount</u> of yeast cells at <u>start</u>	1	Use more yeast cells	Temperature

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
9 (a) (i)	Momo, Promo, Quango	1		Additional powders
(ii)	Repeat experiment/do experiment/investigation again More pieces of film (in t/t)	1	Set up control Film in water/without detergent	
(b)	Trap enzymes in wax Encloses the <u>enzymes</u> in a harmless <u>coating</u> /encase in <u>coating</u> Concept – need enzyme and covering and/or coating	1	Immobilised Enzymes pelleted Warning on packet	Jelly coating Rubber coating Plastic coating
(c)	Saves electricity Saves energy/less damage to delicate fabrics/wash at lower temperature/heat water less Use less electricity Cleans better Better at removing stains	1	Cheaper Low temperature – not comparative Reduces environmental damage	
10 (a) (i)	Immobilisation/immobilising	1		
(ii)	End product is easily/does not have to be separated (from yeast + enzyme) <u>Jelly beads/Yeast/enzyme</u> can be re-used No need to stop process/continuous/ Cheaper/faster	1	Easier to collect/take out Last longer	
(b)	(Sugar \longrightarrow Alcohol) + carbon dioxide/CO ₂	1		
(c)	Cask conditioned beer differs from other beer because the yeast <u>is not</u> removed from the cask. Brewery conditioned beer has additional <u>carbon dioxide</u> added. Both correct = 1	1		

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
(d)	Upgrade waste/make into animal/cattle feed/cattle cake/treat waste before disposal Use bacteria to treat waste	1	Feed to animals Don't put in river Re-cycling/re-using	Upgrade + wrong example (eg upgraded to creamy alcoholic drink)
11 (a)	Seedlings are crowded/provide more room/ space/light/water (for growth) Less competition for resources (or example of resource eg water, light, space) Plants compete for light + root space	1	No competition Grow better/bigger Don't have to fight for water/space Room for germination	Germination
(b) (i)	Bulb	1	Onion	
(ii)	Tuber/runner/plantlet/offset Potato tuber	1	Named type of plant (eg potato)	
(c) (i)	Layering	1		Any other method
(ii)	Larger plants produced/success with plants that are difficult to propagate/easier than taking a cutting/being fed by parent plant/new plant identical to mother/parent Already growing in suitable conditions Faster	1	Easy/fast Better growth	

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
12 (a) (i)	Water/moisture/humidity/mist	1	Water pipe/hose	Any other factor - eg sunlight
(ii)	Protect from bad weather/cold/frost Protection from low temperatures/wind/rain/pests/animals Increased growth Gives heat/warmth/increased humidity/control temperature/increased rate of germination	1	Plants grow all year round Light Shelter Don't get damaged Protect from weather Increased germination	
(b) (i)	Cantaloupe	1		
(ii)	 <p data-bbox="421 1193 651 1358">Cucumber plotted anywhere between 700 and 800 but not touching 800 line</p> <p data-bbox="712 1299 1003 1362">Scale = 1 (min of 2 pts) Plotting results = 1</p>	2	No top on bar Daylight showing Shading same as without floating fleece – lose plot mark	

Question	Acceptable answers	Marks	Unacceptable Answer	Negates
13 (a)	Lettuce	1		
(b)	Spacing/volume or amount of water/temperature/type of container/number of seeds/growing medium/same size of container or pot/length of time (any two) Type/mass/amount/depth of soil Depth of planting Length of time experiment is run	2	Water Type of seeds Length of time taken to germinate Weather conditions Time given	

[END OF MARKING INSTRUCTIONS]