

**2005 Biology**

**Standard Grade – General**

**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 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 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  $7.3 \pm 0.1$ .

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

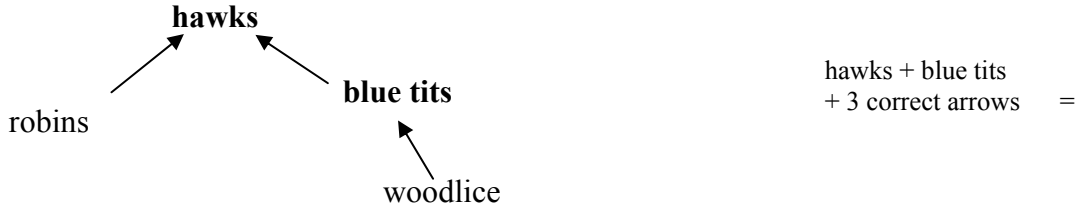
11. **Annotating scripts:**

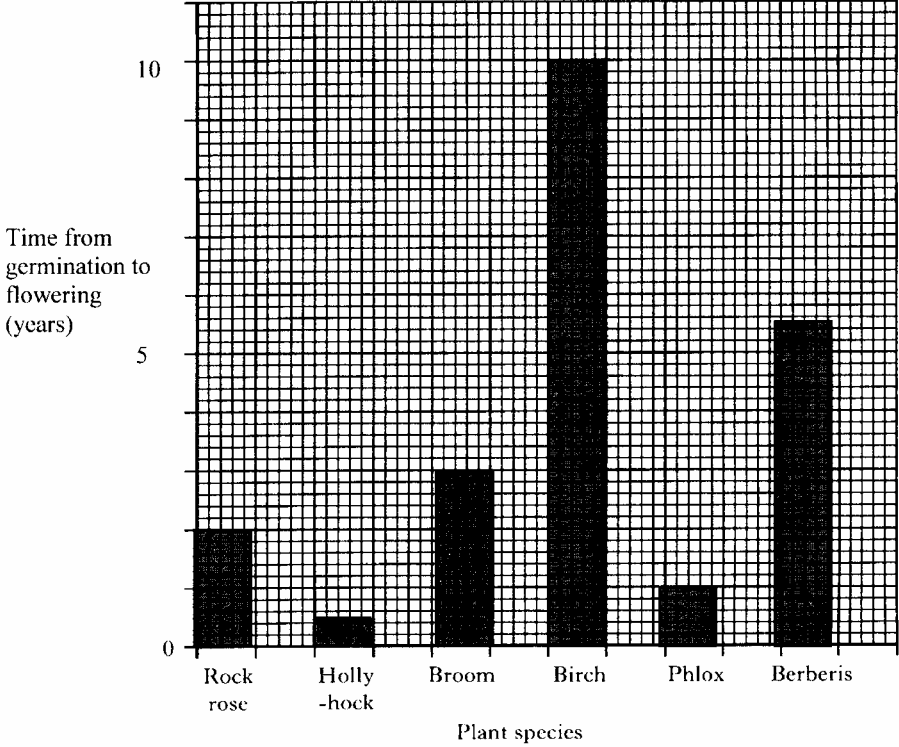
- put a 0 in the box if no marks awarded – a mark is required in each box
- indicate on the scripts why marks were given for part of a question worth 3 or 2 marks. A  $\surd$  or  $x$  near answers will do.

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.

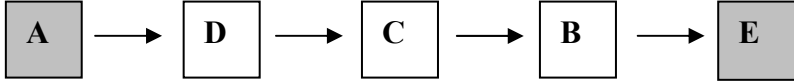
**STANDARD GRADE BIOLOGY - 2005 GENERAL LEVEL FINALISED MARKING INSTRUCTIONS**

Qu	Acceptable answer	Mark	Unacceptable answer	Negates
1 a i	movement / flow / transfer / direction of energy	1	what eats what movement of food energy exchange	no yes
ii	3	1		
iii		1	Lines without arrow heads	
b i	woodlice numbers increase / more woodlice + less food for beetles / increased competition (for food ) both needed	1	answers involving changes to other organisms	
ii	birth rate greater than death rate / death rate less than birth rate	1	birth rate increases / death rate decreases	no
iii	increase / increase in birth rate / decrease in death rate	1		
c	micro-organisms nutrients plants	3 correct = 1 / 2 correct = 2 1		

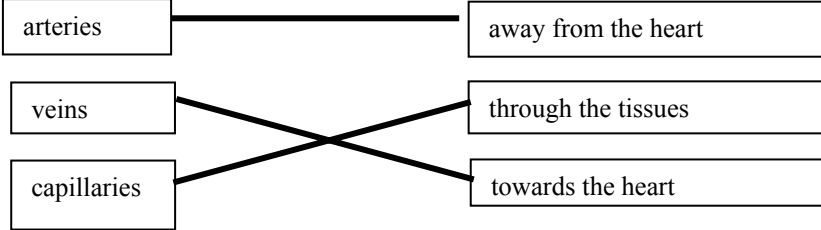
Qu	Acceptable answer	Mark	Unacceptable answer	Negates
2 a	1	1	any additional tube	yes
b i	A embryo / embryo root <u>and</u> embryo shoot / radicle <u>and</u> plumule B food store / cotyledon / seed leaf	1 1	root and shoot / baby plant food / nutrients	
ii	(seed) coat / testa	1	shell	
c	 <p>Time from germination to flowering (years)</p> <p>Plant species</p>	<p>correct y-axis label = 1</p> <p>scale of 10 + at least one other value = 1</p> <p>6 correct bars = 1</p>	<p>scales less than half grid</p> <p>no tops on bars</p>	

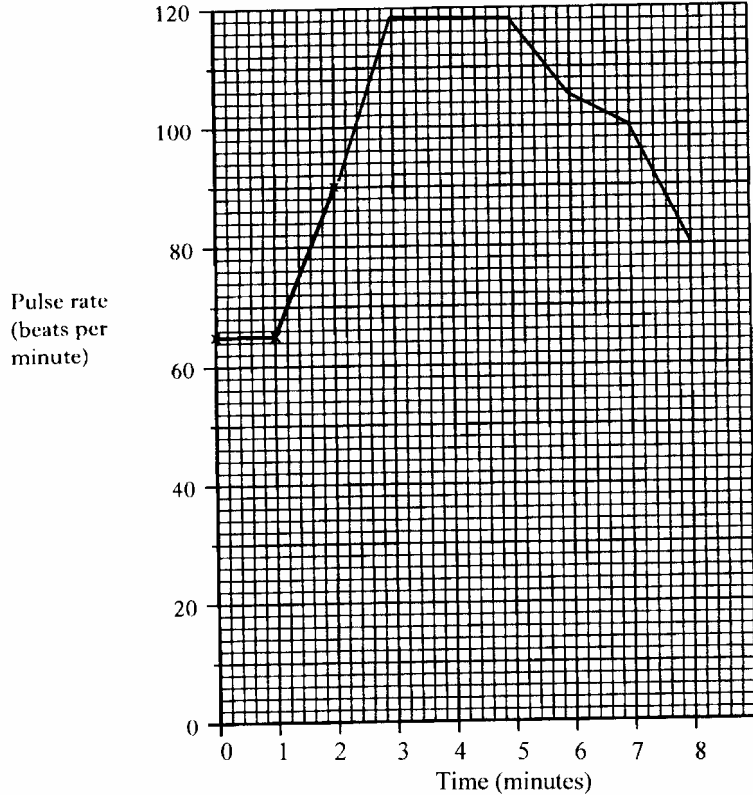


Qu	Acceptable answer	Mark	Unacceptable answer	Negates
5 a	cover / shade one side / side A / side B	1	make one side light and the other side dark any indication that other factors vary	yes
b i	humidity / moisture / temperature	1	wet or dry dampness pH soil moisture	
ii	humidity / moisture – Put moist cotton wool / water or equivalent in base of one side. Put equivalent dry material / drying agent / nothing in other side  temperature - Surround one side with ice pack or equivalent. Surround other side with warm material Surround one side with warm material. Surround other side with ice pack or equivalent material	1	set up which does not correspond to answer in (b)(i) answers that would alter two factors make one side warm and other side cool	yes
6 a	to make the results (more) reliable / representative reduce effect of atypical result	1	to make results accurate reduce effect of <b>a typical</b> result one may be atypical get rid of atypical result valid fair	no no
b	144	1		
c	reaction time decreases / is improved / gets better reaction time is faster	1	reaction time increases	yes

Qu	Acceptable answer	Mark	Unacceptable answer	Negates
7 a		1		
b	<p><b>B</b>      ovary      <b>forms / produces / stores / releases eggs or female sex cells</b> where eggs develop</p> <p><b>C</b>      <b>uterus / womb</b>      where the embryo develops</p> <p><b>E</b>      <b>testis / testes / testicle</b>      <b>forms / produces / stores / releases sperm or male sex cells</b> where sperm develop</p> <p style="text-align: right;">6 correct = 4/5 correct = 2 /3 correct =</p>	<p><b>3</b> <b>2</b> <b>1</b></p>	<p>sex cells</p> <p>produce semen sex cells</p>	
c i	yolk (sac) / egg yolk	1	egg / food store / food sac	
ii	by parents / adults / mothers / father	1	people	



Qu	Acceptable answer	Mark	Unacceptable answer	Negates
8 a i	W Z	1		
ii	S	1		
iii	P Q	1		
b	left ventricle / it pumps blood further it pumps blood all round body, (right ventricle pumps blood just to lungs)  right ventricle pumps blood <u>only</u> to lungs	1	produces more pressure	
c i	 <p style="text-align: right; margin-right: 50px;">3 correct = 2/1 correct =</p>	2 1		
ii	arteries	1		

Qu	Acceptable answer	Mark	Unacceptable answer	Negates
9 a	 <p>Pulse rate (beats per minute)</p> <p>Time (minutes)</p> <p> i label + scale on x axis (0, 8 + at least one other value) = <b>1</b>  ii correct plot = <b>1</b> </p>			
b	pulse/heart rate higher <u>than start</u> / pulse rate had not returned <u>to normal</u> / pulse rate still above <u>65</u>	<b>1</b>	pulse still high	
c	continue timing until pulse / heart rate returns / falls / goes back to normal / 65 / starting rate	<b>1</b>	time for longer / time for 10 min etc /time until they recover breathing rate	
d	shorter / faster / lower / untrained person has longer recovery time	<b>1</b>	better	

Qu	Acceptable answer	Mark	Unacceptable answer	Negates
10 a	it releases <u>excess histamine</u> /too much histamine	1	extra histamine	
b	common for members of the same family to be affected / to have hayfever / it families have it	1	related to asthma and eczema	yes
c	wheezy (chest)	1		
d	<u>early summer</u> beginning of summer	1	exam time	
e	steroids / steroid tablets / steroid injections	1	antihistamine	
f	(can cause) <u>serious</u> side effects / they can only be given under close hospital supervision	1		
11 a i	discontinuous	1		
ii	200	1		
b i	<p>correct division of segments = 1 correct labels = 1</p>			
ii	40	1		
c i	<p>Similarity - group AB lowest (in both) / group B 3<sup>rd</sup> (in both)</p> <p>Difference - group O largest in X, not in Y / group A largest in Y, not in X / groups O and A reversed positions</p>	1 1	not many with AB AB 5% in both (or other wrong %) O and A greatest	
ii	Y larger sample size / more of Y included in sample more people asked	1 1	Town Y larger / has more people more people	





Qu	Acceptable answer	Mark	Unacceptable answer	Negates
17 a i	methane / biogas / fuel / fertiliser	1	animal food / compost / manure / organic solids	
ii	micro-organisms / bacteria / fungi / protozoa / microbes	1		
iii	(biological) filtration / filter bed / trickle / spray sewage over stones / air spaces in filter beds activated sludge process / bubble air through sewage / stirring sewage (to mix with air)	1	pump oxygen through sewage	
b i	January, February, March, November, December	all correct = 1	April, October	yes
ii	temperature	1	light / oxygen / rain / pH / warmth	
18 a	50	1		
b	carbon dioxide / CO <sub>2</sub>	1	gases	
c	Y	1		
d	Z	1		
e	(single-celled) fungus	1	micro-organism	
19 a	air / atmosphere + land / soil / earth	both correct = 1		
b	<p><b>Industry</b> smoke / SO<sub>2</sub> / chemical waste / radioactive waste / (crude) oil / CO<sub>2</sub> / fumes / oxides of nitrogen / soot / nuclear waste / CO / noise / hot water / heavy metals / greenhouse gasses</p> <p>agriculture / farming <b>fertilisers</b></p> <p>domestic / people / household <b>litter</b></p> <p>3 correct = 2</p> <p>1 / 2 correct = 1</p>		smog / acid rain / radiation / chemicals / gases	
c	improved exhaust systems (or eg) / lead free petrol / traffic control measures (or eg) / increased use of public transport / electric vehicles / less harmful petrol/less use of cars/increase road tax	1	walk more / use diesel	

[END OF MARKING INSTRUCTIONS]