



2010 Biology

Standard Grade – Credit

Finalised Marking Instructions

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Standard Grade Biology 2010 – Additional marking notes

Markers Meeting

Do take clear notes of all decisions taken and use them in your marking.

Do bring up reasonable different interpretations of a question which may lead to different acceptable answers.

Do provide other responses illustrating good biology.

Do only bring up alternative responses you have actually seen.

Do try to form an idea of the minimal acceptable answer based on the marking instructions and any discussion.

Do not bring up obviously different ways of saying the same thing.

Do not bring up repeated examples of clearly incorrect answers.

Do not raise issues not directly concerning the marking instructions – put them in your report.

During marking

There are **no half marks**.

In the marking instructions, if a word is underlined then it is essential; (bracketed) then it is not essential. Answers separated by / are alternatives.

Negation. A correct answer can sometimes fail to gain the mark if it is negated. This happens when: An extra **incorrect answer** is given together with the correct one.

Additional incorrect information is given which contradicts the correct answer, demonstrating a misunderstanding of the question. (Additional unrequired information will not negate a correct answer if it does not contradict that answer).

Do accept chemical formulae instead of chemical names.

Do accept subscript, superscript and normal script when used to identify generations in genetic crosses.

Do accept incorrect spelling if it looks or sounds reasonably correct – unless it could be confused with another biological term or is an amalgam of two or more words.

Do try to make a decision if you see a response not discussed at the markers meeting. Make a note of your decision and use it if the same response is seen again.

Do put 0 in **every** mark box where zero marks have been awarded.

Do check the totalling of the script marks carefully.

Do not make any written comments on the scripts. Use ticks, crosses, underlining, etc to indicate marking decisions.

Referring scripts

Refer scripts to the Principal Assessor (*PA Referral*) only in extreme cases of indecision over an answer. A relevant referral form must be completed and included with the script. The script should be labelled ***PA Referral***.

Refer scripts for *Special Attention (M)* if there is suspected malpractice or offensive remarks on the script. A report should be written on a separate piece of paper and included with the scripts. The script packet should be labelled ***Special Attention (M)***.

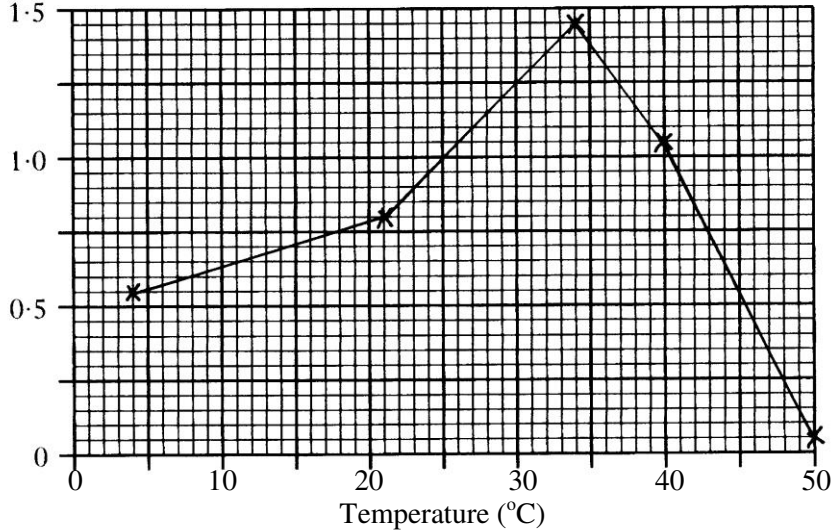
STANDARD GRADE BIOLOGY – 2010 CREDIT LEVEL MARKING INSTRUCTIONS

Qu	Acceptable answer	Mark	Unacceptable answer
1 (a) (i)	4	1	
(ii)	2	1	
(iii)	Bigger sample used / Used more traps	1	
(iv)	<i>Precaution</i> <i>Reason</i> (must be appropriate to precaution)	1	
	<i>Pitfall trap</i> Rim at soil level So animals or invertebrates or insects can fall in	1	
	Cover trap So predators can't eat trapped animals / To keep rain out		
	Drainage holes So trapped animals don't drown Put alcohol in trap To preserve trapped animals / So trapped animals don't eat each other		
	<i>Other named sampling techniques</i> <i>Precaution</i> <i>Reason</i> (must be appropriate to precaution)		
(b) (i)	4 <i>Spider</i>	1 1	Worm
	No shell <i>Earthworm</i>	1	
(ii)	Spots on body Fewer than 12 legs	all correct = 1	
			Spots The number of legs

Qu	Acceptable answer	Mark	Unacceptable answer
2 (a)	<i>Fossil fuel</i> Limited supply / Finite / Greenhouse gas production / CO ₂ production / SO ₂ production / Causes acid rain / Causes global warming / Smoke causes asthma	1	Produces harmful gases / causes pollution Waste is dangerous
	<i>Nuclear fuel</i> Danger of radiation leaks / Waste is radioactive / Waste needs stored for a long time / Description of how waste must be stored	1	
(b) (i)	1 There was more food / energy for the micro-organisms	1	
	2 Micro-organisms use more oxygen / More micro-organisms using oxygen – not enough for fish	1	
(ii)	Organisms which give information about the environment / pollution	1	
	Organisms which live in specific conditions		
3 (a) (i)	27	1	5 dishes used
	(ii) volume or amount of water or moisture (or equivalent) / type of grass seed / pH	1	
	(iii) 20 seeds used / large number of seeds used	1	
(b)	As temperature increases up to an optimum or 27°C, percentage germination increases As temperature increases further, percentage germination decreases (Must identify 27°C as the change point or state there is an optimum to get both marks) (As temperature increases, percentage germination increases then decreases = 1)	1 1	

Qu	Acceptable answer	Mark	Unacceptable answer
4 (a) (i) (ii) (iii) (iv)	2 and 6 46 2 Length of all the roots added together or Total length of roots + Divide total by the number of roots <div style="text-align: right;">Both parts needed =</div>	1 1 1 1	
(b)	Can be sure of their characteristics / Show same features or characteristics or good points as parent / All will be as successful as parent / Avoids vulnerable early stage of growth / Quicker	1	
(c)	Clone	1	

Qu	Acceptable answer	Mark	Unacceptable answer
5 (a) (i)	1 800 2 0.05 (ii) Fewer eggs or young surviving / More chance of eggs not being fertilised / More chance of eggs or young being eaten / Eggs are less well protected (answer needs a comparison) (iii) No external water for sperm to swim / Sperm need fluid to swim	1 1 1 1	
(b)	placenta exchange of materials between mother and fetus or embryo or baby / passes food or oxygen or nutrients from mother to fetus etc / passes waste or urea or CO ₂ from fetus etc to mother	1 1	Answer suggesting placenta is the source of the food etc

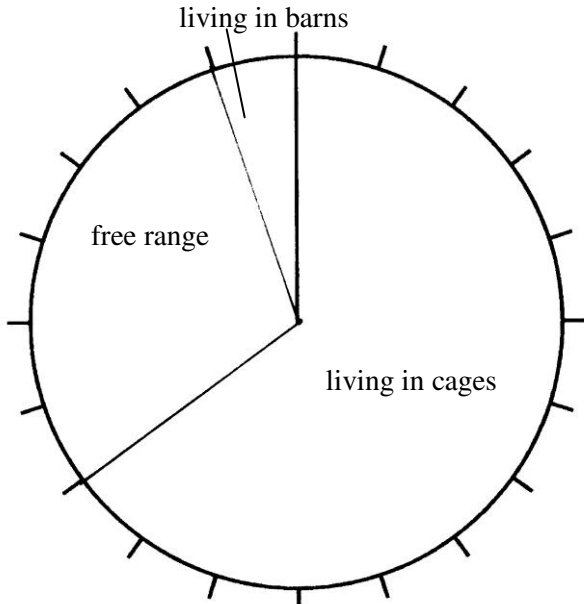
Qu	Acceptable answer	Mark	Unacceptable answer
6 (a)	 <p data-bbox="324 379 472 443">Increase in oxygen (%)</p> <p data-bbox="846 710 1055 742">Temperature (°C)</p> <p data-bbox="324 770 1458 834">Correct x axis label + scale (0, 50 plus at least one other value. Must use more than half of grid) Correct plotting and joining of points</p>	1 1	
(b)	34	1	
(c)	To avoid reaction starting at wrong temperature / So it was at the correct temperature at the start of the reaction / Because reaction would start as soon as the catalase was added	1	

Qu	Acceptable answer	Mark	Unacceptable answer
(d)	Other enzymes do not break down hydrogen peroxide / Enzymes are specific / Enzymes only work on one substrate / Other enzymes have different substrates	1	
(e)	29 : 21 : 1	1	

Qu	Acceptable answer	Mark	Unacceptable answer
7 (a)	0.9 No gain or loss of water at this concentration / No osmosis at this concentration / No change to cells at this concentration / They look like the untreated cells	1	
(b)	Cells have shrunk or become crenated or crinkled up or shrivelled up Water has moved out of cell by osmosis / Water has moved out of cell to a lower water concentration / Water has moved out of cell down a concentration gradient	1 1	Cells have become plasmolysed / flaccid
8 (a) (i)	One muscle moves joint in one direction + second muscle needed to move joint in opposite direction One muscle bends joint + second muscle needed to straighten joint Muscles contract to move bone or joint + so two muscles needed for full movement Muscles only work in one direction + so two muscles needed for full movement Muscles only work by pulling + so two muscles needed for full movement	1+1	One muscle contracts and the other relaxes
(ii)	Tendons are inelastic / do not stretch	1	
(b)	cartilage synovial fluid <div style="text-align: right;">both correct =</div>	1	

Qu	Acceptable answer	Mark	Unacceptable answer						
9 (a)	obesity / diabetes / high blood pressure / smoking / lack of exercise / hardening of the arteries any three =	1							
(b)	<table border="1" data-bbox="324 427 672 499"> <tr> <td>2.9</td> <td>2.6</td> <td>4.4</td> </tr> <tr> <td>6.2</td> <td>2.3</td> <td>0</td> </tr> </table>	2.9	2.6	4.4	6.2	2.3	0	6 correct = 2 3 / 4 / 5 correct = 1	
2.9	2.6	4.4							
6.2	2.3	0							
(c)	Changes (or example) that lead to heart disease occur at an early age / To reduce risk of heart disease later	1							
(d)	Respiration	1							
10 (a) (i)	7.5	1							
(ii)	Fat	1							
(b)	carbon hydrogen oxygen / C H O	1							

Qu	Acceptable answer	Mark	Unacceptable answer
11 (a)	decreases increases	both correct = 1	
(b) (i)	5	1	
(ii)	0.64	1	
(iii)	1 : 9	1	
12 (a) (i)	40	1	
(ii)	Word processing causes muscle fatigue or All pupils showed muscle fatigue or No pupils had no fatigue or No pupils had very low fatigue Muscle fatigue varies or not all pupils are affected the same More pupils did not require urgent investigation than did	Any two, 1 mark each 2	
(b) (i)	lactic acid	1	
(ii)	Reduces anaerobic respiration / Allows more aerobic respiration Increased oxygen supply reduces lactic acid production	1	

Qu	Acceptable answer	Mark	Unacceptable answer
13 (a) (i)	 <p data-bbox="1153 494 1523 766"> Correct divisions = 1 (accept other arrangements of correct divisions) Correct labelling = 1 (if segments not accurate but are labelled in appropriate proportions, then allow mark) </p>		
(ii)	9 million / 9 000 000	1	
(b) (i)	1400	1	
(ii)	selective breeding (accept description)	1	genetic engineering

Qu	Acceptable answer		Mark	Unacceptable answer
14 (a) (i)	NN	Nn	All correct = 1	
	Nn	nn		
	(ii)	Parent 1 Parent 2 F ₁	Polydactyly / Extra toes Normal / No extra toes / Non polydactyly Polydactyly / Extra toes	
(iii)	discontinuous		1	
(b)	Fertilisation is random / The effects of chance / Sample size too small / Number of offspring is too small		1	

Qu	Acceptable answer	Mark	Unacceptable answer
15 (a) (i)	Continuous flow	1	
(ii)	It is immobilised / It is attached onto beads or stationary surface	1	
(b) (i)	bacteria	1	
(ii)	genes / chromosomal material / pieces of chromosome / DNA	1	chromosome
(c) (i)	sugar / maltose	1	
(ii)	destroys / removes micro-organisms which might compete with yeast / prevents competition from unwanted micro-organisms	1	kills unwanted micro-organisms / prevents contamination

Qu	Acceptable answer	Mark	Unacceptable answer
16 (a) (i)	As lactose concentration decreases / lactic acid concentration increases	1	
(ii)	Decrease in lactose greater than increase in lactic acid / More lactose is lost than lactic acid is produced	1	
(b)	0.026	1	

[END OF MARKING INSTRUCTIONS]