



2009 Biology

Standard Grade – General

Finalised Marking Instructions

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Standard Grade Biology 2009 – Additional marking notes

Please use these notes alongside the finalised ‘VERSION 2 MARKING INSTRUCTIONS’

Markers Meeting

Do take clear notes of all decisions made 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)***.

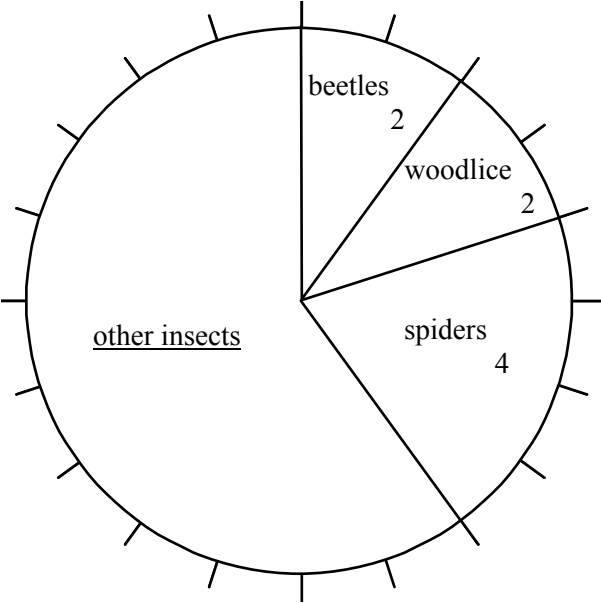
STANDARD GRADE BIOLOGY – 2009 GENERAL LEVEL MARKING INSTRUCTIONS VERSION 2

Qu	Acceptable answer	Mark	Unacceptable answer
1 (a) (i)	A. Rowan B. Laurel	1 mark each	
(ii)	made up of one part (leaf edge) has wavy outline / edge	both correct =	Single leaf
(b) (i)	1975	1	
(ii)	any value in range 221 – 224 Accept anything greater than 220 and less than 225 including decimal places	1	
(c) (i)	stomata / stoma	1	
(ii)	carbon dioxide / CO ₂	1	

Qu	Acceptable answer			Mark	Unacceptable answer
2 (a)	B			four correct = 2 two / three correct = 1	Acts as a landing platform Attracts animals / birds Nectar / sugar store / nectar gland
A		attracts insects / encloses reproductive parts / protects reproductive parts			
	nectary				
(b)	transfer of pollen from <u>stamen</u> / <u>anther</u> to insect transfer of pollen from insect to <u>stigma</u> transfer of pollen from <u>stamen</u> / <u>anther</u> to <u>stigma</u> by insects = 2 transfer of pollen from <u>stamen</u> / <u>anther</u> to <u>stigma</u> = 1			1 1	Insect takes pollen from one plant to another
(c)	Ovary / ovary wall			1	

Qu	Acceptable answer			Mark	Unacceptable answer
3 (a)	chloroplast	✓		2	
	nucleus	✓	✓		
	cell membrane	✓	✓		
<p>A cross in the 'Empty' box is ok</p> <p>One mark for each correct column</p>					
(b)	stain			1	Staining solution / dye / named stains – does not negate if named stain is given as an example
(c)	<p>the same as</p> <p>two</p>			1	both correct =

Qu	Acceptable answer	Mark	Unacceptable answer
4 (a) (i)	light intensity	1	Light
(ii)	high food supply low light intensity low predation	all correct = 1	
(b)	habitat population ecosystem	three correct = 2 one / two correct = 1	
(c) (i)	they both want / need the same resources (accept appropriate example) they both want / need the same things / factors they both want / need / require a particular resource	1	Any reference to fighting or sharing or competing / against each other Going for same resource See who would get same resource Competing for same resource Any reference to fighting, eg killed by beetles
(ii)	Effect – decrease / go down / drop / lower Reason – less of the resource (or example) (for woodlice) / Greater / increased competition (for the resource) (or example) (needs comparative)	1	All woodlice would die Forced out / beetles take all the food
(iii)	pitfall trap	1	Pot trap / description of pitfall trap Pitfall

Qu	Acceptable answer	Mark	Unacceptable answer
4 (d)	 <p data-bbox="1048 788 1592 890"> correct division of segments (any order) = 1 correct labelling = 1 </p>		

Qu	Acceptable answer		Mark	Unacceptable answer
6		forms / produce / release sperm / male gametes / male sex cells	C	five correct = 3 three / four correct = 2 one / two correct = 1 Produce testosterone Stores sperm / contains sperm – negates Egg tube / ovary duct An egg (instead of ovary)
	oviduct / fallopian tube			
	ovary	forms / produce / release / contains / stores eggs / female gametes or female sex cells		
7 (a) (i)	Same volume / level / mass / amount of water <u>in both test tubes</u> / <u>both</u> test tubes filled with water		1	Increase volume in tube B Visking tubings covered with water
(ii)	Answer refers to keeping <u>both</u> tubes at same temperature / keep both test tubes at the same temperature / keep both test tubes at 30°C / to keep temperature constant in both tubes		1	To keep tubes at body temperature Provide energy for reaction to take place Active enzymes To keep it heated / heat the water to 30°C To make enzyme activity faster
(b) (i)	Starch / breakdown of starch		1	carbohydrate
(ii)	Control / control experiment		1	

Qu	Acceptable answer	Mark	Unacceptable answer
8 (a)	(Highest) – atmosphere (Lowest) – muscle (cells) both correct =	1	
(b) (i)	diffusion	1	Breathing – negates
(ii)	osmosis	1	
(c)	aerobic respiration	1	respiration
9 (a)	Peak flow rates / it increase to (age) 30. then decreases / it decreases after (age) 30 / 30 years begins to decrease after 30 peak flow rates increase then decrease = 1 decrease in peak flow either side of age 30 = 1	1 1	
(b)	390	1	

Qu	Acceptable answer	Mark	Unacceptable answer
10 (a)	<p>African (elephants) – have larger ears have fan shaped ears and Asian elephants ears are straighter at the bottom have tusks in both sexes and Asian females do not have tusks / <u>some</u> Asian males do not have tusks All African elephants have tusks</p> <p>African (elephants) – are taller are heavier or correct examples of weight (accept are larger / bigger as alternative to taller or heavier but not to both)</p> <p>(accept two differences given together eg African elephants have large fan shaped ears – Asian elephants have smaller ears that are straight at the bottom = two differences)</p> <p style="text-align: right;">three correct = 2 one / two correct = 1</p>		<p>Answers with incorrect values eg African elephants weigh 7 tonnes – Asian elephants weigh 5 tonnes</p> <p>3 right and 1 wrong or incomplete</p>
(b)	Males leave (the herd) at puberty	1	Before adulthood / after puberty
(c) (i)	For their tusks / ivory	1	
(ii)	Few <u>Asian</u> elephants have tusks / more African elephants have tusks	1	Trading ivory is now illegal
(d)	Less <u>logging</u> work for elephants	1	Reduction in forests / increase in machinery (not negating) Less logging

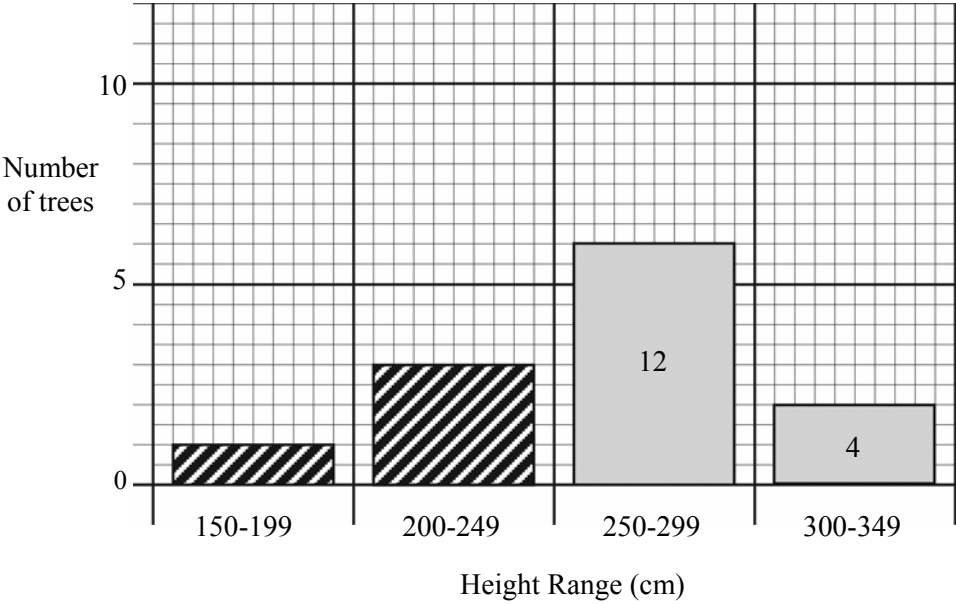
Qu	Acceptable answer	Mark	Unacceptable answer
11 (a)	4	1	
(b)	0.5	1	
(c)	12 : 1	1	
(d)	8	1	
(e)	<ul style="list-style-type: none"> • Measure their breathing (measure volume of air breathed per min) / heart rate / pulse rates at rest / before exercise • Both do same exercise • Measure time for their breathing (measure volume of air breathed per min) / pulse rates to return to normal / measure both recovery times • One with shorter recovery time is the fitter / find which has the shorter recovery time <p style="text-align: right;">all four points = 2 two / three point covered = 1</p>		Do same investigation
12 (a)	minerals / calcium phosphate / calcium minerals / calcium salts	1	Calcium or phosphorus alone Inorganic / marrow
(b)	contracts / contraction / shortens	1	Relaxes (negates) Pulls / tenses up
(c)	tendon – 4 ligament – 8	1 1	

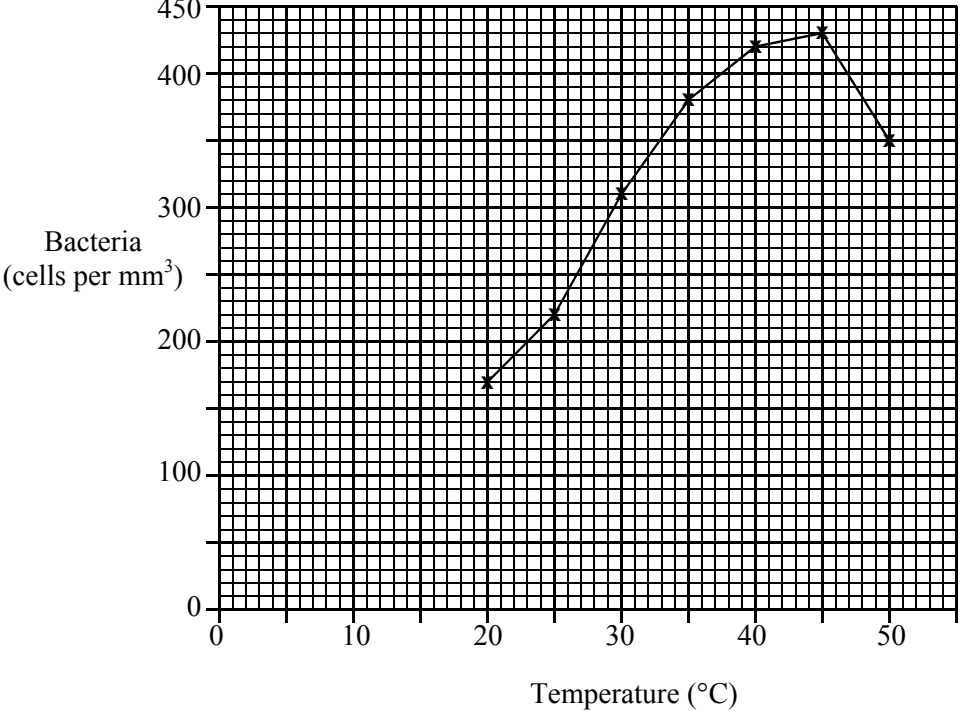
Qu	Acceptable answer	Mark	Unacceptable answer																																																							
13 (a) (i) (ii)	rhythmical tide / being covered or uncovered by water / tidal changes / tidal movements / patterns	1 1	Rhythm / rhythmic Low tide / high tide Sea levels / tide level Height of water or tide																																																							
(b) (i) (ii)	<table border="1" data-bbox="347 496 952 675"> <tr> <td>black</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>blue</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>red</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>white</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>no spot</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p data-bbox="1086 544 1491 611"> Must show clear end of bar Something shaded in all six boxes </p> <p data-bbox="347 746 389 777">red</p>	black											blue											red											white											no spot											 1 1	
black																																																										
blue																																																										
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no spot																																																										

Qu	Acceptable answer	Mark	Unacceptable answer
14 (a)	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">cornea</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">retina</div> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0 10px 50px;">lens</div> <hr style="border-top: 1px dashed black; margin: 10px 0 10px 150px;"/> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">semi-circular canals</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">auditory nerve</div> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0 10px 350px;">cochlea</div> <div style="margin-left: 400px; margin-top: 20px;"> six correct = four / five correct = two / three correct = </div>	3 2 1	Watch out for spelling errors between cornea and cochlea where confusion occurs
(b) (i)	Better judgement of distance or easier / quicker to thread needle using two eyes Time taken decreased using two eyes Judgement of distance / threading needle improves with practice / more attempts	1 1	Focus better with 2 eyes Accuracy improves with 2 eyes
(ii)	Same needle / size of needle / size of needle hole / type of needle thickness of thread colour of thread type of thread condition of cut end of thread light conditions same distance between volunteer and needle which eye is kept open / shut same hand holding needle / thread	any two, one mark each 2	Same length / size of thread Same thread Same person / volunteer Number of attempts Length of needle

Qu	Acceptable answer	Mark	Unacceptable answer								
15 (a) (i)	C Accept F1, written beside (c) in diagram	1	56 scented plants								
(ii)	A, B, D Accept true breeding written next to letters in diagram all correct =	1									
(b)	unscented and scented both correct =	1	Nonscented A and B								
16 (a) (i)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"></td> <td style="width: 20%;">yeast</td> <td style="width: 20%;">alcohol / ethanol</td> <td style="width: 20%;"></td> </tr> <tr> <td></td> <td></td> <td>methane / biogas</td> <td></td> </tr> </table>		yeast	alcohol / ethanol				methane / biogas		2 1	Fungi instead of yeast Gasohol Gas
	yeast	alcohol / ethanol									
		methane / biogas									
(ii)	conserves fossil fuels / fossil fuels will run out / renewable / endless source / they won't run out / less pollution / cleaner burning / less acid rain	1	No pollution / cheaper Healthier for environment Better for environment Ecofriendly No harmful gases Less global warming								
(b)	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px; text-align: center;">✓</td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> </table> protein			✓		1					
✓											

Qu	Acceptable answer	Mark	Unacceptable answer
(c) (i)	Typhoid / cholera / dysentery / polio	three correct = 1 one / two correct =	Dynasty / E.coli Diarrhoea / typhus
(ii)	cleaning work surfaces / disinfect washing hands before work washing hands after work (accept wash hands for one mark) flaming inoculating loop / tools flaming neck of culture bottle use sterile equipment keep petri dishes covered work near Bunsen wear protective clothing or example sterilise / autoclave used equipment / proper disposal of plates Seal and label plates	any two, one mark each = 2	Wash work surface Tie hair back No eating / drinking Airtight seal Disinfectant everything Labelling on its own Don't touch / breathe on plate

Qu	Acceptable answer	Mark	Unacceptable answer
17 (a) (i)	260	1	
(ii)	makes <u>result(s)</u> (more) reliable reduces effect of atypical <u>result(s)</u> / <u>result(s)</u> are more representative reduces effect of abnormal <u>result(s)</u>	1	Increases validity / accuracy – negates Prevents atypical results It is more reliable
(iii)	variation	1	Discontinuous variation Continuous variation Variables / variety
(b)	 <p data-bbox="347 766 448 829">Number of trees</p> <p data-bbox="795 1189 1030 1220">Height Range (cm)</p> <p data-bbox="526 1125 638 1157">150-199</p> <p data-bbox="739 1125 851 1157">200-249</p> <p data-bbox="940 1125 1052 1157">250-299</p> <p data-bbox="1142 1125 1254 1157">300-349</p> <p data-bbox="974 957 1019 989">12</p> <p data-bbox="1176 1045 1198 1077">4</p> <p data-bbox="1299 821 1545 989">(i) scale of 6 or above as maximum plus at least one other value =</p> <p data-bbox="1299 1021 1545 1093">(ii) each bar correct 1 mark each =</p> <p data-bbox="1232 1228 1545 1332">Width of bar unimportant Shading unimportant Top of bars needed</p>	<p data-bbox="1556 957 1590 989">1</p> <p data-bbox="1556 1053 1590 1085">2</p>	

Qu	Acceptable answer	Mark	Unacceptable answer
(c) (i)	4 : 3	1	
(ii)	80	1	
18 (a)	 <p data-bbox="338 699 517 762">Bacteria (cells per mm³)</p> <p data-bbox="864 1150 1070 1182">Temperature (°C)</p>	<p data-bbox="1330 624 1532 719">Must use at least ½ of graph paper</p> <p data-bbox="1368 820 1532 852">y axis label = 1</p> <p data-bbox="1339 887 1532 983">y axis scale of 450 + minimum of one other = 1</p> <p data-bbox="1346 1023 1532 1118">correct plotting and joining of points = 1</p> <p data-bbox="1184 1222 1532 1318">Accept extension of line back towards 15°C or just beyond but not back to axis</p>	<p data-bbox="1688 679 2033 743">No squiggly line to compress graph scale</p>

Qu	Acceptable answer	Mark	Unacceptable answer
(b)	45	1	
(c)	Any value in range 120 – 150	1	
(d)	Asexual / binary fission	1	Asexual mitosis
(e)	to spread the heat / food / oxygen / bacteria / to stop bacteria settling / mix liquid and bacteria same temperature throughout any one =	1	Mix bacteria / keep bacteria moving Add O ₂ Mix chemicals together Prevent stagnation To work faster
19 (a)	primitive blood (cell)	1	Primitive
(b)	pre-cartilage (cell)	1	
(c)	embryo	1	When it's in the womb Fetal stage

END OF MARKING INSTRUCTIONS]