2012 Biology

Standard Grade Credit

Finalised Marking Instructions

Standard Grade Biology 2012 – Additional marking notes

Please use these notes alongside the finalised **' MARKING INSTRUCTIONS'**

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.

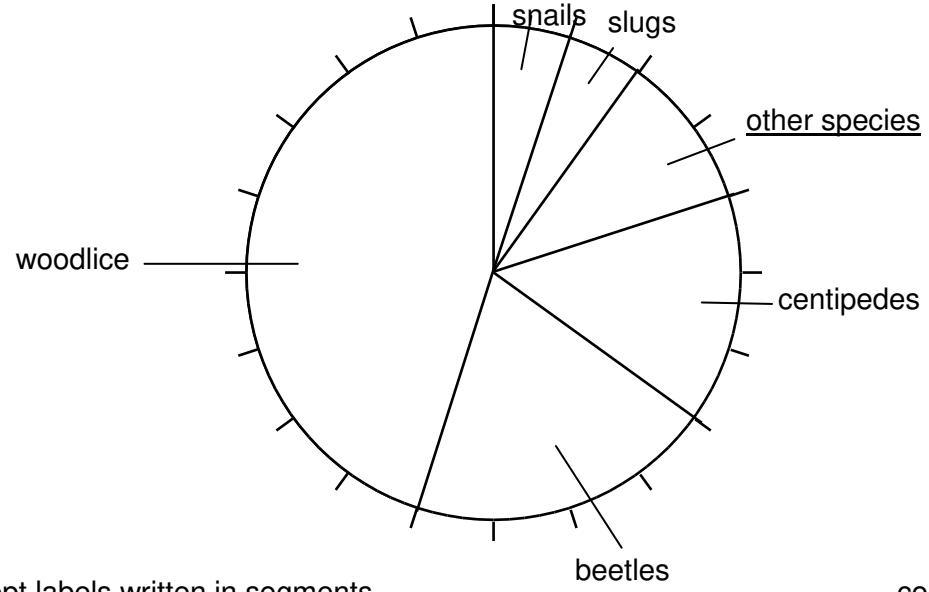
Do not make any written comments on the scripts. Use ticks, crosses, underlining, etc to indicate marking decisions.

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 S*pecial 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 **S*pecial Attention (M)***.

STANDARD GRADE BIOLOGY – 2012 CREDIT LEVEL MARKING INSTRUCTIONS

Qu	Acceptable answer	Mark	Unacceptable answer
1 (a) (i)	oak tree: 30000 [ ]: 2400 sparrow: [ ] [ ]: 95 5 correct boxes = 2 3 / 4 correct boxes = 1	**2**	
(ii)	750 000	**1**	
(b)	 Accept labels written in segments Accept correct key instead of labels correct divisions = 1 correct labels = 1 (Allow different sequence of divisions Allow labels mark if divisions are wrong but in correct order of sizes)	**1** **1**	

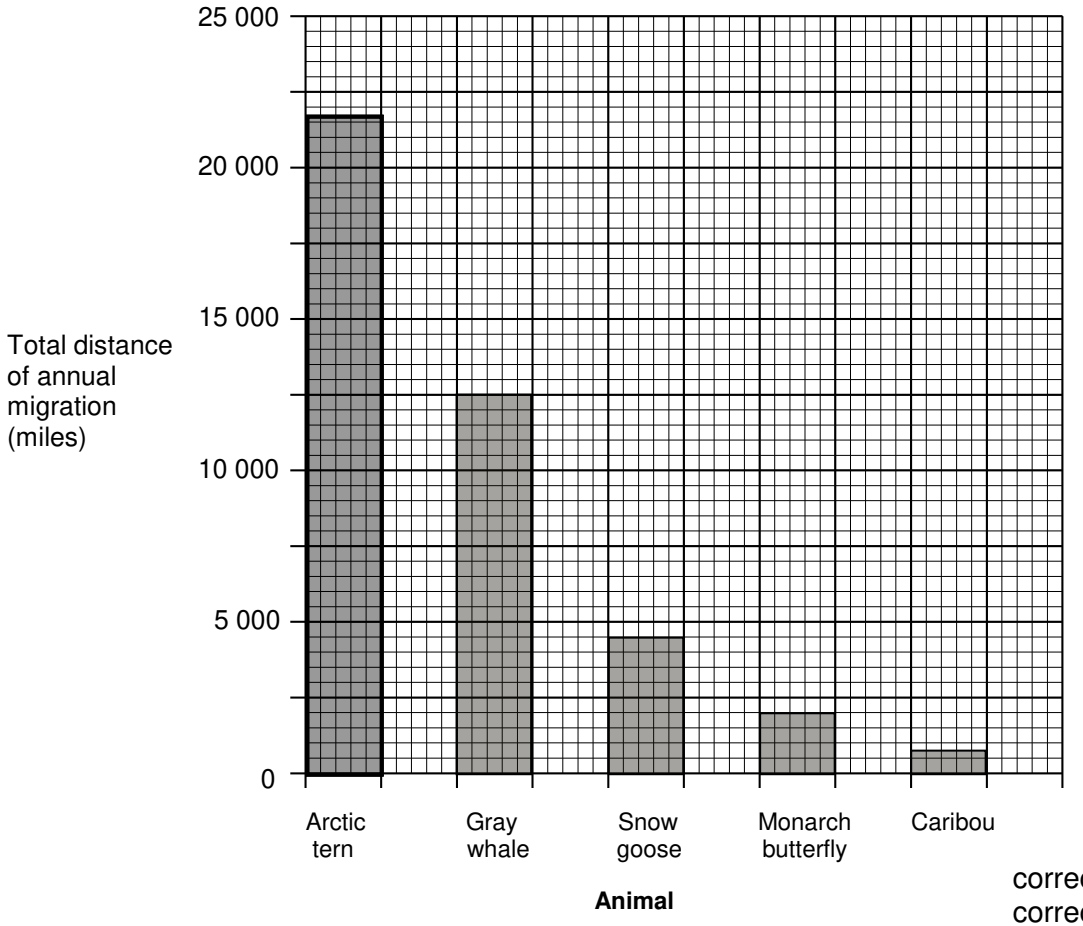
Qu	Acceptable answer	Mark	Unacceptable answer
2 (a) (i)	*Average number of mussels per quadrat* = 4; *Estimated number of mussels per m^2* = 16	**1**	
(ii)	Group A Too few quadrats / Quadrats concentrated in one part of area / Quadrats not random	**1**	Experiment not repeated
	Increase number of quadrats / Spread quadrat sites more / Place quadrats randomly	**1**	Repeat the experiment (Don't penalise twice)
	(quadrats : samples : results)		Do more tests
(b)	It shows the total mass / weight of living material / organisms present in each level / stage of a food chain (Accept.....food web)		amount
	It shows the mass / weight of <u>all</u> the living material / organisms present in each level / stage of a food chain (Accept .....food web)	**1**	
(c) (i)	Increase More food / plankton available/ less / no competition for food **or** Dog whelks eat more periwinkles so fewer oystercatchers to eat mussels **or** Decrease Dog whelks eat more periwinkles so less food for oystercatchers so they eat more mussels		No competition
	Stay the same – must explain both effects and say they cancel each other.	**1**	
(ii)	Decrease Dog whelks eat more periwinkles **or**		They are the dog-whelks only food
	More plankton so more mussels so more oystercatchers to eat them	**1**	

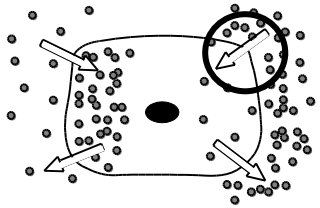
Qu	Acceptable answer						Mark	Unacceptable answer
3	*Pollination*		*Seed dispersal*			All pollinations correct = All dispersals correct =	**1** **1**	
		✓			✓			
		✓		✓				
	✓		✓					

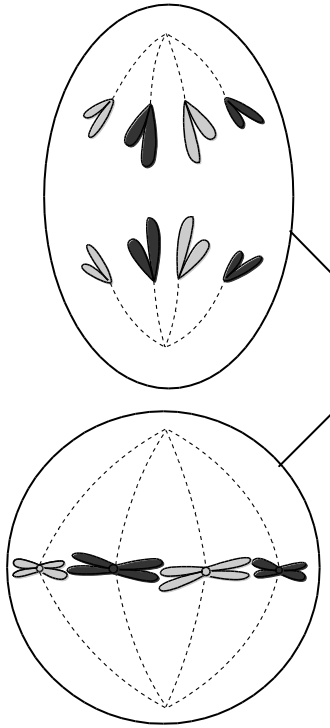
Qu	Acceptable answer			Mark	Unacceptable answer
4 (a)		Conscious control of actions / Memory / Decision making / Thinking / Personality / Intelligence etc	3 correct = 1 / 2 correct = 1	2	controls movement
		Coordination (of movement) / Balance			
	Medulla				
(b)(i)	1 : 180			1	
(ii)	Kangaroo ✓			1	

Qu	Acceptable answer		Mark	Unacceptable answer
5 (a)	**A** or **D** **B** or **C** or **E** **B** or **C** **E**	4 correct = 2 / 3 correct = 1	**2**	Additional incorrect answers negate
(b)	increasing increases	both correct =	**1**	
(c)	X carbon dioxide (concentration) / Lack of carbon dioxide Y temperature / temperature too low	both correct =	**1**	temperature too high
(d)	carbon dioxide glucose starch	3 correct = 1 / 2 correct = 1	**2**	

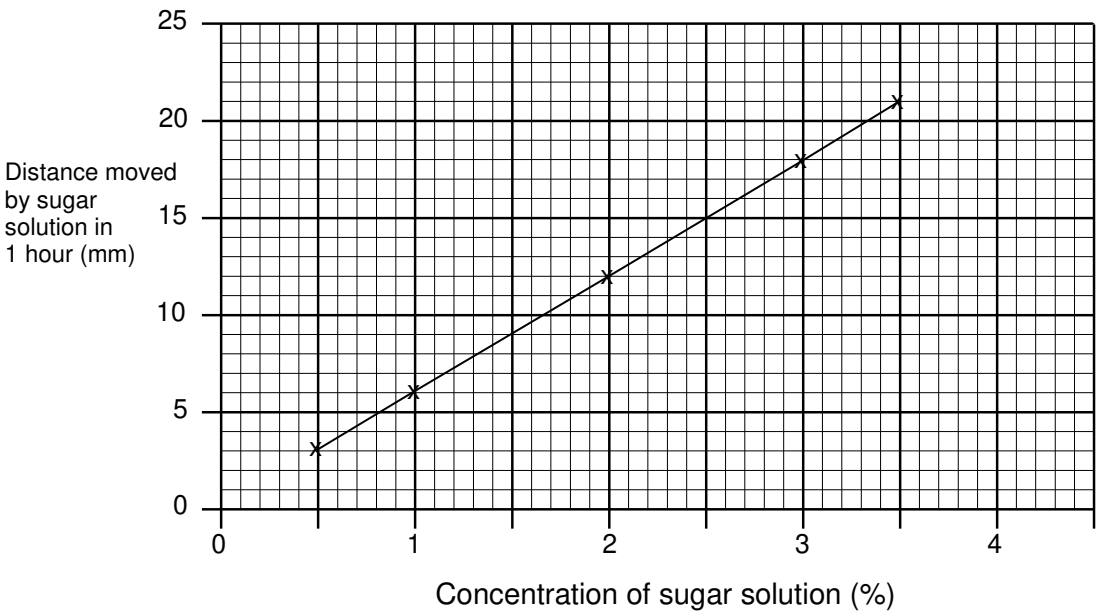
Qu	Acceptable answer	Mark	Unacceptable answer
6 (a) (i)	glomerulus	**1**	
(ii)	filtration / filtering	**1**	
(iii)	1. amino acids / protein 2. liver 3. in the blood / plasma / renal artery 3 correct = 1 / 2 correct = 1	**2**	
(b) (i)	40	**1**	
(ii)	15	**1**	

Qu	Acceptable answer	Mark	Unacceptable answer
7 (a) (i)	 correct label = correct plots =	**1** **1**	Abbreviated labels Topless bars
(ii)	80	**1**	
(b) (i)	Avoid harsh conditions / To find more favourable conditions / To breed / To find food / Because of daylength changes (Any answer indicating a change in conditions which is unfavourable)	**1**	
(ii)	rhythmical	**1**	rhythmic

Qu	Acceptable answer	Mark	Unacceptable answer
8 (a) (i)	10% salt solution **Z** 2% salt solution **Y** pure water **X** Both correct =	**1**	
(ii)	osmosis	**1**	
(b)		**1**	

Qu	Acceptable answer	Mark	Unacceptable answer
9 (a)	 chromosomes shorten and thicken chromosomes line up at the centre of the cell chromatids are pulled to opposite ends of the cell nuclear membrane reforms 1 mark each correct answer =	**2**	Additional lines negate. 1 mark each.
(b)	(Daughter cells) have identical information as the parent cell / Ensures that no information is lost / changed Daughter cells have a full chromosome complement Daughter cells have all the correct information (information : genes : DNA : chromosomes)	**1**	Have the same number of chromosomes

Qu	Acceptable answer	Mark	Unacceptable answer
10	living cells pull tendons inelastic 4 correct = 2 / 3 correct = 1	**2**	

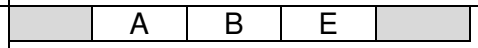
Qu	Acceptable answer	Mark	Unacceptable answer
11 (a)	temperature / depth of bag in water / volume of water / amount of water	**1**	
(b)	 Correct label and scale = (scale of 0, 3·5 or 4 and minimum of one other) Correct plotting and joining of points = (Accept extrapolating graph at top end – because of prediction)	**1** **1**	extrapolating graph at bottom
(c)	24 Moves 3mm for every 0·5% concentration / Moves additional 3mm for every additional 0·5% concentration (or equivalent) Extrapolated graph goes to 24mm	**1**	

<table>
<tr><th>Qu</th><th>Acceptable answer</th><th>Mark</th><th>Unacceptable answer</th></tr>
<tr><td>12 (a)</td><td>anchorage;
nutrients;
water;
oxygen / air
any three =</td><td>1</td><td></td></tr>
<tr><td>(b)</td><td>Colonisation by lichens and mosses / plants
Death and decay of plants adds organic matter
Colonisation by (other plants and) animals
Continued death and decay
2 / 3 points = 1</td><td>2</td><td>Description of formation of small mineral particles – lose 1 mark</td></tr>
<tr><td>(c)</td><td><table>
<tr><td></td><td></td><td>fast</td><td>low</td></tr>
<tr><td></td><td>small</td><td>slow</td><td>high</td></tr>
<tr><td>loam</td><td>mixed</td><td></td><td>medium</td></tr>
</table>3 rows correct =
1 / 2 rows correct = 1</td><td>2</td><td></td></tr>
<tr><td>(d)</td><td>It contains living organisms</td><td>1</td><td></td></tr>
</table>

Qu	Acceptable answer	Mark	Unacceptable answer
13 (a) (i)	micro-organism	**1**	
(ii)	Injected by mosquito / by a mosquito bite	**1**	In mosquito saliva
(iii)	liver	**1**	
(iv)	16 – 20 <u>days</u>	**1**	
(b)	haemoglobin / oxyhaemoglobin	**1**	

Qu	Acceptable answer	Mark	Unacceptable answer
14 (a)	0·03	**1**	
(b)	14	**1**	
(c)	lactose lactic acid bacteria 3 correct = 1 / 2 correct = 1	**2**	sugar

Qu	Acceptable answer	Mark	Unacceptable answer
15 (a)	The bacteria increased for 16 hours Then remained steady (Needs pattern + correct time for both marks Increased then remain steady = 1)	**1** **1**	
(b) (i)	Any temperature in range 25 – 45°C	**1**	
(ii)	Some bacteria can survive temperatures up to 110°C / To kill endospores / resistant spores To kill all bacteria	**1**	To kill bacteria / to sterilise it
(iii)	Bacteria can still grow	**1**	
(c)	protein	**1**	

Qu	Acceptable answer	Mark	Unacceptable answer
16 (a) (i)	allele	**1**	
(ii)	B is **Tt** / has both alleles / is heterozygous and clasps hands with left thumb on top	**1**	
(iii)	**tt** **Tt** **Tt** 3 correct = 1 / 2 correct = 1	**2**	
(iv)	3 : 1 / 3 in 4 / 75% ¾ 0·75	**1**	
(v)	5 : 3	**1**	
(b)		**1**	

Qu	Acceptable answer	Mark	Unacceptable answer
17 (a)	Digest stains / breakdown stains Makes stains more soluble / so stains can be washed out	**1** **1**	react with stains
(b) (i)	1 Volume / quantity / amount of water 2 Mass / quantity / amount of washing powder **or** 1 Concentration of solution 2 Volume /quantity / amount of solution **or** 1 Brand of powder 2 any of the variables above both correct =	 **1**	 type of washing powder
(ii)	Investigation / experiment should be repeated Collect more results for each temperature / powder	 **1**	
(iii)	Saves energy / Reduces cost / Causes less damage to fabrics	**1**	Can wash at a lower temperature
(c)	Different types of stains require different enzymes to digest them / One enzyme cannot digest all types of stains / Enzymes are specific to particular stains / For different types of stains (Answer must refer to stains)	**1**	Enzymes are specific

[END OF MARKING INSTRUCTIONS]