

GCSE SCIENCE - BIOLOGY
B1
MARK SCHEME - SUMMER 2014

Question	Marking details	Marks Available
1 (a)	No {backbone/ vertebral column/ spinal column/ vertebrae}; NOT spinal cord/ bone	1
(b)	ANY ORDER B C D F; all four correct = 3 three correct = 2 two correct = 1	3
	Question 1 total	[4]

Question	Marking details	Marks Available
2 (a)	Sun/ solar; NOT light/ sunlight	1
(b)	<u>Energy</u> ;	1
(c) (i)	20; Correct answer = 2 marks If incorrect answer allow one mark for $(500/2500) \times 100$	2
(ii)	<u>Respiration/ respiring/ respire</u> ;	1
Question 2 Total		[5]

Question	Marking details	Marks Available
3 (a)	2.5;	1
(b)	0.25;	1
(c)	Any three from: light/ sunlight; NOT sun water; NOT moisture/ rain nutrients/ minerals/ salts/ named mineral; NOT food/ salt space; NOT room/ area carbon dioxide/ CO ₂ ;	3
(d)	(A and B are) <u>different</u> {types/sorts/species/genes/DNA}/ genetically different/genetic variation/ there has been a mutation; NOT different chromosomes	1
Question 3 Total		[6]

Question	Marking details	Marks Available
4	(a) (i) Soldiers whose wounds had maggots were <u>more</u> likely to survive (than soldiers who did not have maggots)/ ORA; (comparison is needed)	1
	(ii) Maggots ate bacteria (and dead flesh around the wound);	1
	(iii) Make his findings known widely/ allow reproducibility/ others to test/ to confirm findings; NOT to help more soldiers;	1
	(b) <u>Fewer</u> side effects/ drug toxicity/ bacterial resistance/ maggots are more widely available (in some parts of the world)/ some people are allergic to antibiotics; NOT some people react to antibiotics (unqualified)/ easier (unqualified)/ no side effects/ safer/ act quicker	1
	Question 4 Total	[4]

Question	Marking details	Marks Available
5 (a)	Nucleus; Gene; Protein;	3
(b) (i)	I 8; II Kangaroo; (8 is/ gametes have) {half the body cell number/ half the diploid number}/ 8 is the haploid number/ {reference to fertilisation restoring the body cell chromosome number/OWTTE}; NOT half the number of chromosome 2 nd mark only accessed if 1 st mark credited	1 2
(ii)	36;	1
Question 5 total		[7]

Question	Marking details	Marks Available
6 (a)	(2) 3 4 1 5; one mark for each number correctly positioned	4
(b)	Become extinct/ die out/ wiped out; NOT die (unqualified)/ become endangered	1
Question 6 Total		[5]

Question	Marking details	Marks Available
7 (a)	<p>1. (Playing) music {increases/slows} reaction time/ slows reactions</p> <p><i>OR Reverse answer</i></p> <p>Not playing music decreases reaction time/ makes reactions faster/ speeds up reaction time;</p> <p>NOT worse/better/improved reaction time</p> <p>2. With music, reaction times are variable/ reaction time decreases with {trial number/ practice}</p> <p><i>OR Reverse answer</i></p> <p>Without music reaction time is constant/ steady/ the same;</p> <p>NOT the longer Bob listens to music the quicker his reaction time</p>	max 2
(b)	<p>(i) Eye;</p> <p>(ii) Impulses/<u>electrical</u> signals;</p> <p>Along neurones/nerve/ nerve cells;</p>	1
		2
	Question 7 total	[5]

Question	Marking details	Marks Available
8/1 (a)	(i) Pike	1
	(ii) Pyramid correctly drawn (accept triangle) with correct labels and biomasses with units = 2 marks Pyramid correctly drawn with names of organisms on own without masses = 1 mark Pyramid correctly drawn with biomasses on own with units without named organisms = 1 mark Incorrect order or level missing = 0 marks	2
	<p style="text-align: center;"> <div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto; text-align: center; padding: 2px;">Pike 250 kg</div> <div style="border: 1px solid black; width: 200px; height: 30px; margin: 0 auto; text-align: center; padding: 2px;">Minnows 500 kg</div> <div style="border: 1px solid black; width: 300px; height: 30px; margin: 0 auto; text-align: center; padding: 2px;">Beetles 800 kg</div> <div style="border: 1px solid black; width: 400px; height: 30px; margin: 0 auto; text-align: center; padding: 2px;">Snails 4 500 kg</div> <div style="border: 1px solid black; width: 500px; height: 30px; margin: 0 auto; text-align: center; padding: 2px;">Aquatic Plants 45 000 kg</div> </p>	
	(iii) Tier above the pike;	1
(b)	{Single/one} {plant/ tree / named plant/ producer}; NOT aquatic plant On which {many organisms/ named organisms} {feed/ live off};	2
	Question 8/1 total	[6]

Question	Marking details	Marks Available
9/2 (a)	(i) The cows are <u>genetically</u> different/have different <u>genes</u> / show <u>genetic</u> variation/ different ages/ variation in the milk producing genes; NOT different genetics/ sizes/ inherited it from their parents/ mutation	1
	(ii) River field cows' milk production is higher/ ORA; there are <u>environmental</u> differences/ named environmental difference e.g. temperature/soil/nutrients/water content/ {richer/better <u>quality</u> } grass (must be comparative); 2 nd mark only awarded if 1 st is credited	2
	(iii) Sperm (are used)/ two parents/ bull and cow;	1
(b)	Holstein; it has the { <u>lowest/least</u> } fat content/ lower fat than the other cows; 2 nd mark point only accessed if first correct sugar=neutral	2
Question 9/2 Total		[6]

Question	Marking details	Marks Available
10/3	(a) <u>Erector muscle</u> ;	1
	(b) <ol style="list-style-type: none"> 1. Hairs {erect/raised/ stand up/ stick up/ are lifted/ pulled up/ straight up/ up}; 2. Trap <u>thicker</u> layer of air/ more air trapped; NOT trap layer of warm air (can be neutral) 3. Which is {an insulator/ poor conductor} / which lets less heat pass out/ which insulates/ harder for heat to escape; NOT no heat passes out <p>3rd mark only awarded if 2nd awarded</p> <p>ACCEPT REVERSE ARGUMENT</p>	3
	(c) Any two from: <ol style="list-style-type: none"> 1. Vasoconstriction/ {capillaries/ blood vessels} {narrow/ constrict/ thinner}/ diameter gets smaller; NOT contract/ get smaller/ blood vessels moving up and/or down 2. shivering; {reduced/ no} sweating/ less sweat {produced/ secreted}; 	2
	Question10/3 Total	[6]

Question	Marking details	Marks Available
11/4	<p><i>Indicative content:</i></p> <p>All plants/seedlings/flowers are growing vertically straight up.</p> <p>{Place plants on a window sill/ in a (blacked out) box with a hole in one side/ any method of one sided illumination}.</p> <p>Leave plants for specified length of time.</p> <p>Plants show growth towards light/ tips 'bend' towards light. NOT move</p> <p>Reference to involvement of hormone e.g. hormone cause shoots to bend.</p> <p>Reference to control by eliminating the effect of one sided light. This should be uniform illumination. NOT darkness</p> <p>Shoots/tips don't bend towards light.</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 11/4 Total</p>	6
Question 11/4 Total		[6]