



GCSE

## Biology B

General Certificate of Secondary Education

Unit **B631/01**: Modules B1, B2, B3 (Foundation Tier)

## Mark Scheme for June 2012

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All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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## Annotations

Annotation	Meaning
✓	Correct response
✗	Incorrect response
BOB	Benefit of doubt
BOD	Benefit of the doubt not given
ECF	error carried forward
OM	Omission Mark
IGN	Ignore
REJ	Reject
CON	Contradiction

## Subject-specific Marking Instructions

/	alternative and acceptable answers for the same marking point
(1)	separates marking points
allow	answers that can be accepted
not	answers which are not worthy of credit
reject	answers which are not worthy of credit
ignore	statements which are irrelevant
( )	words which are not essential to gain credit
—	underlined words must be present in answer to score a mark (although not correctly spelt unless otherwise stated)
ecf	error carried forward
AW	alternate wording
ora	or reverse argument

Question		Expected Answers	Marks	Additional Guidance
1	(a)	oxygen (1)	1	<b>allow</b> correct formula
	(b)	<b>any two from:</b> (muscles are) working harder / need more energy / respiration faster (1)  to get <b>more</b> oxygen (to the muscle) (1)  <b>more</b> carbon dioxide (made by the muscles) is removed <b>or</b> carbon dioxide (made by the muscles) is removed <b>more</b> quickly (1)	2	<b>if no mention of muscle max mark = 1</b> <b>allow</b> less oxygen in the atmosphere (1) <b>ignore</b> lots of energy  <b>allow</b> muscle needs <b>more</b> oxygen  <b>ignore</b> references to heart rate / blood / oxygen debt
	(c)	(i) sweating (1)	1	<b>allow</b> breathing / radiation <b>ignore</b> vasodilation
		(ii) tick in 3 <sup>rd</sup> box / High body temperature can cause dehydration (1)	1	
	(d)	(i) pancreas (1)	1	
		(ii) sugar / glucose (1)	1	
		<b>Total</b>	<b>7</b>	

Question		Expected Answers	Marks	Additional Guidance
2	(a)	nucleus (1)  change (1)  recessive (1)	3	<b>allow</b> transformation / alteration / defect / error  <b>not</b> mutated
	(b)	tick in 1 <sup>st</sup> box / earlobe shape (1)	1	
		<b>Total</b>	<b>4</b>	

Question		Expected Answers	Marks	Additional Guidance
3	(a)	<b>any two from:</b> binocular vision: uses two eyes (to focus / look at an object) (1) has a better judgement of distance(1) gives the perception of depth / 3D (1) has a smaller field of view (1) has forward facing eyes (1)  monocular vision: uses one eye (to focus / look at an object) (1) has a poor judgement of distance (1) has poor depth perception (1) has a wider field of view (1) has eyes on the side of the head (1)	2	<b>Answers must be correctly linked to binocular / monocular</b> eg binocular uses two eyes = 1 eg uses two eyes = 0  <b>ignore</b> you can see a greater distance / further
	(b)	iris (1)	1	<b>allow</b> iris labelled on the diagram
	(c)	let in <b>more</b> light / hunt at night / see in the dark (1)	1	<b>ignore</b> general references to just seeing better <b>ignore</b> nocturnal alone eg they are nocturnal = 0 eg they are nocturnal hunters = 1
		<b>Total</b>	<b>4</b>	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	(i) growth / repair (1)	1	<b>allow</b> make enzymes / proteins / build muscle / <b>emergency</b> energy source  <b>ignore</b> keep healthy / for energy
		(ii) 52.5 (1)	1	<b>allow</b> 53 but not 52
	(b)	(i) higher (no mark) because she is shorter (1) but has the same mass (1)  <b>Or</b>  because her BMI is 24.22 (2)	2	<b>ignore</b> smaller <b>allow</b> weight for mass <b>allow</b> reverse argument  <b>allow</b> 24.2 but 24.221 etc / 24.20 = (1)  if answer is lower then maximum of one mark
		(ii) lack of exercise / does not play sport (1)	1	<b>allow</b> reference to high fat diet  <b>ignore</b> references to height / weight / mass / being unfit
			<b>Total</b>	<b>5</b>

Question		Expected Answers	Marks	Additional Guidance
5	(a)	white fur (1) thick fur (1) thick layer of fat (1) large size (1) small ears (1) large feet / large paws (1) hair on soles of feet (1) sharp claws (1)	2	<b>accept</b> white coat <b>accept</b> thick coat <b>allow</b> blubber  <b>ignore</b> reference to teeth <b>allow</b> black skin (1)
	(b)	population rises <u>and</u> falls (1)  <b>any two factors affecting population size:</b> hunting / legal protection / education programmes (1) food availability (1) habitat destruction / ice caps melting / climate change (1)	3	<b>max 2 if no factor correctly linked to population changes</b>  <b>ignore</b> no food <b>ignore</b> global warming  <b>allow</b> 1 mark for the idea that population estimates have become more accurate
	(c)	(a plant or animal) in danger of becoming extinct (1)	1	<b>allow</b> about to die out / dying out / numbers dropping <b>too low</b> / not many of them left (1)  <b>ignore</b> animal or plant will die <b>ignore</b> numbers going down / dying unless qualified
	(ii)	carbon dioxide (1)	1	<b>allow</b> methane / water vapour / CFCs <b>not</b> carbon monoxide / sulfur dioxide <b>allow</b> correct formula <b>ignore</b> just water / greenhouse gas(es) / carbon emissions
			<b>Total</b>	<b>7</b>

Question		Expected Answers	Marks	Additional Guidance
6	(a)	photosynthesis (1) oxygen (1) starch (1)	3	
	(b)	(i) idea of replacing the resources as they are used eg growing plants that can be replenished after being used (1)	1	<b>allow</b> never run out  <b>not</b> can be used again
		(ii) fish (stocks) / biofuels / composting (1)	1	<b>allow</b> wind / solar / water <b>ignore</b> wood / woodland
	(c)	sulfur dioxide / acid rain (1)	1	<b>allow</b> correct formula <b>allow</b> carbon dioxide / nitrogen oxides
		<b>Total</b>	<b>6</b>	

Question		Expected Answers		Marks	Additional Guidance										
7	(a)		<table border="1"> <tr><td>A</td><td>Wireworm</td></tr> <tr><td>B</td><td>Aphid</td></tr> <tr><td>C</td><td>Long horn beetle</td></tr> <tr><td>D</td><td>Leaf beetle</td></tr> <tr><td>E</td><td>Flea beetle</td></tr> </table>	A	Wireworm	B	Aphid	C	Long horn beetle	D	Leaf beetle	E	Flea beetle	2	all correct 2 marks four or three correct 1 mark
A	Wireworm														
B	Aphid														
C	Long horn beetle														
D	Leaf beetle														
E	Flea beetle														
	(b)	(i)	48 (2) but $\frac{120}{10}$ (1) $12 \times 4$ (1) $120 \times 4$ (1) $0.25 \times 4 = 1$ (1) $1 / 0.25 = 4$ (1)	2											
		(ii)	153600 (1)	1	allow ecf ie (b)(i) $\times 3200$										

Question		Expected Answers	Marks	Additional Guidance
	(c)	<p>It would go down (no mark)</p> <p><b>any two from:</b> there is competition (1)</p> <p>grasshoppers eat more grass / leaf beetles have less grass (1)</p> <p>grasshoppers eat the grass before the leaf beetles / grasshoppers eat the grass quicker than the leaf beetles (1)</p>	2	<p><b>It would go up = 0</b></p> <p><b>allow</b> food as an alternative to grass</p> <p><b>allow</b> food as an alternative to grass</p>
			<b>Total</b> 7	

Question			Expected Answers	Marks	Additional Guidance
8	(a)	(i)	infancy (1) childhood (1)	2	<p><b>any order</b></p> <p><b>allow</b> infant</p> <p><b>allow</b> child</p>
		(ii)	1 and 2 (1)	1	
	(b)		differentiation (1)	1	<b>allow</b> answer circled / underlined
	(c)		to carry / transport <b>oxygen</b> (1)	1	<b>ignore</b> just oxygen
				<b>Total</b> 5	



Question		Expected Answers	Marks	Additional Guidance
10	(a)	0.6 (1)	1	
	(b) (i)	2.9 (1)	1	<b>allow 50 °C and 3<sup>rd</sup> attempt</b>
	(ii)	<b>any one from:</b> some gas escaped from the tube / tube not fitted tightly (1) temperature was too high (1) not enough / too dilute hydrogen peroxide (1) not enough yeast (1)	1	<b>not</b> just wrong temperature <b>ignore</b> yeast denatured / enzymes killed <b>not</b> just wrong amount <b>not</b> just wrong amount
		<b>Total</b>		<b>3</b>

Question		Expected Answers	Marks	Additional Guidance
11	(a)	lungs (1)	1	
	(b)	sperm (cell) (1)	1	
	(c)	<b>any one from:</b> defend against disease (1)  make / release antibodies (1)  destroy / kill / engulf pathogens (1)	1	<b>allow</b> protect against disease / infection / pathogens  <b>allow</b> destroy bacteria / micro-organisms <b>ignore</b> fight bacteria / fight pathogens / fight infection  <b>not</b> germs
	(d)	artery (1)	1	<b>allow</b> pulmonary artery
		<b>Total</b>	<b>4</b>	

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