



GCSE

Biology B

General Certificate of Secondary Education

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

Mark Scheme for January 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.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotations

Annotation	Meaning
	correct response
	incorrect response
	benefit of the doubt
	benefit of the doubt <u>not</u> given
	error carried forward
	information omitted
	ignore
	reject
	contradiction

Subject-specific Marking Instructions

Abbreviations, annotations and conventions used in the detailed Mark Scheme.

- / = 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 = alternative wording
- ora = or reverse argument

Question		Answer	Marks	Guidance
1	(a) (i)	<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">fibre</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">iron</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">protein</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">vitamin C</div> </div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">prevents scurvy</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">growth and repair</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">makes haemoglobin</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">prevents constipation</div> </div> </div>	2	All 3 correct (2) 1 or 2 correct (1)
	(ii)	half / 50% (1)	1	ignore 23
	(b)	oxygen (1) respiration (1)	2	must be correct order
	(c)	to transport it (all) around the body (1)	1	allow rapid transport of glucose to cells (1) ignore move blood through arteries or blood vessels (1) ignore so blood can flow easily unless qualified e.g. blood can flow easily around the body (1)
		Total	6	

Question		Answer	Marks	Guidance
2	(a)	carbon monoxide (1) tar (1)	2	allow CO / particulates / cyanide / nitrogen oxides / carbon dioxide / CO ₂ ignore nicotine / carcinogen
	(b)	(i) 3.4/ 0.25 or 3.4/0.50 ² (1) BUT 13.6 (2)	2	allow 14 (2) but not 14.0
		(ii) addiction (1)	1	more than one answer circled then no marks
		(iii) check if harmful / see if safe / it may be toxic / check for side effects / get levels of medication or dosage correct / check it works (1)	1	allow they might be dangerous ignore may affect body / organs unless qualified ignore check for faults
		(iv) animals harmed in testing / ethical idea e.g. cruel to animals (1)	1	answer must refer to negative aspects of animal testing but ignore just 'because it is tested on animals' allow animals may not behave like humans so unreliable ignore unqualified answers e.g. against religious belief
		Total	7	

Question			Answer	Marks	Guidance
3	(a)	(i)	37 (°C)	1	allow 36.5 to 37.5 (°C)
		(ii)	any 3 from: reduce sweating (1) less blood flow near the skin surface (1) hairs erect (1) idea of huddling (1) add extra clothing (1) more muscle action / exercise (1) shivering (1) increased respiration (1)	3	allow higher level reference to vasoconstriction(1) ignore goose bumps allow cover up with snow (1) allow more movement (1) allow idea of reduced surface area exposed e.g. curl up (so less heat lost) (1)
		(iii)	fast / protective (1)	1	ignore requires a stimulus ignore ideas about being automatic
	(b)	(i)	2 (hours) (1)	1	
		(ii)	alcohol causes body to cool down / increases heat loss (1)	1	allow vasodilation increased allow in case they need medical treatment ignore thins the blood ignore the idea that alcohol is normally served cold or with ice
			Total	7	

Question		Answer	Marks	Guidance
4	(a)	habitat (1)	1	allow correct answer ticked, circled or underlined if answer line is blank
	(b)	(i) (species) that is close to extinction (1)	1	allow not many left ignore idea of decreases in population unless qualified e.g. numbers have gone down (0) e.g. numbers have gone down to a dangerous level (1)
	(ii)	any one from: climate change (1) pollution (of rainforest) (1) hunting (1) competition for food / space (1) disease (1)	1	ignore habitat destruction allow global warming / acid rain allow increase in predators but ignore just predators allow decrease in prey / food ignore limited resources ignore just 'competition' allow idea of disturbance from felling allow populations become isolated allow not reproducing fast enough / death rate greater than birth rate
	(iii)	any one from: legal protection / stop hunting (1) idea of education of local people (1) captive breeding programs (1) artificial ecosystems / reserves (1)	1	ignore protection of habitat ignore replant rainforest ignore zoos / enclosures / cage ignore 'conservation programmes' allow corridors to prevent isolation allow provide food / feeding stations ignore tourism
	(c)	any two from: food (1) mate (1) water (1)	2	ignore shelter allow dominance (1)
		Total	6	

Question			Answer	Marks	Guidance
5	(a)	(i)	Ras Al Khaimah (1)	1	allow Ras
		(ii)	0.5 (2) but if answer incorrect 0.8 – 0.3 (1)	2	
	(b)		chicken manure <input type="checkbox"/> minerals <input checked="" type="checkbox"/> wood <input type="checkbox"/> vegetable oil <input type="checkbox"/> (1)	1	more than one answer ticked then no marks
	(c)		carbon dioxide / carbon monoxide / sulfur dioxide (1)	1	allow water vapour / hydrogen sulfide / methane / nitrogen oxide allow correct symbol

Question		Answer	Marks	Guidance
(d)	(i)	<p>any three from:</p> <p>can withstand high body temperatures (1) so does not need to sweat / can store heat at night (1)</p> <p>long eye-lashes / bushy (1) stop sand getting into eyes (1)</p> <p>hair lines nostrils / close nostrils (1) to stop sand getting in (1)</p> <p>large feet / wide feet (1) to stop camel sinking into sand / spread out the load (1)</p> <p>can drink large amounts of water (1) so they can travel further without water (1)</p> <p>large surface area to volume (1) to allow more heat loss (1)</p>	3	<p>allow any three correct ideas</p> <p>allow more sets of eyelids / more eye lashes (1)</p> <p>allow flat feet / webbed feet (1) ignore just 'to walk on sand'</p> <p>ignore stores water / fat in hump</p> <p>but allow reference to fat as a food store / source of metabolic water (1)</p> <p>additional marking points: allow (underside) of body less fur / short fur / thin fur (1) so heat is lost more easily (1) or allow longer fur (on upper side) (1) to keep warm at night (1) ignore no fur</p>
	(ii)	mammal (1)	1	
		Total	9	

Question		Answer	Marks	Guidance
6	(a) (i)	photosynthesis (1)	1	
	(ii)	chlorophyll (1)	1	ignore chloroplasts
	(b)	<p>The cactus is adapted to live in rainforests. <input type="checkbox"/></p> <p>The cactus is adapted to live in a cold, wet place. <input type="checkbox"/></p> <p>The cactus is adapted to live in the Arctic. <input type="checkbox"/></p> <p>The cactus is adapted to live in a hot, dry place. <input checked="" type="checkbox"/></p>	1 (1)	more than one answer circled then no marks
	(c)	any two from: place the quadrat in a random way / AW (1) count the number inside the quadrat (1) repeat many times / use a number of quadrats (1) calculate mean / average (1)	2	allow idea of using a grid / transect / or throwing randomly (1) ignore reference to multiplying to get numbers in whole area
			Total 5	

Question			Answer	Marks	Guidance
7	(a)	(i)	gametes (1)	1	
		(ii)	cloning (1)	1	
	(b)		swimming (1) genes (1)	2	allow moving / getting to the egg (1) ignore to fertilise the egg allow DNA / genetic material / chromosomes / genetic information (1)
	(c)		undifferentiated cell / unspecialised cell / cell that can become any (type of) cell (1)	1	not just cell that can divide allow a cell that can differentiate ignore cells with no function
	(d)		meiosis (1)	1	allow spelt phonetically (no 't') allow reduction division
			Total	6	

Question			Answer	Marks	Guidance
8	(a)		the lungs (1)	1	
	(b)	(i)	aorta (1)	1	more than one answer circled then no marks
		(ii)	platelets (1)	1	ignore plasma / plasma proteins
		(iii)	(wire must go through the skin) so possible infection (1)	1	allow reference to battery may be damaged / disconnected allow idea of wire disconnecting or breaking ignore ideas that power may fail
			Total	4	

Question		Answer	Marks	Guidance
9	(a)	glucose, fats, oxygen (1)	1	need all three for 1 mark any other substance negates mark
	(b)	they (diffuse from) a high(er) concentration to a low(er) concentration (1)	1	need reference to concentration allow there is a lower concentration in the foetus (1) allow there is a higher concentration in the mother (1) allow the concentration in the foetus is low but high in the mother (1)
		Total	2	

Question		Answer	Marks	Guidance
10	(a)	vacuole labelled (1) chloroplast labelled (1)	2	
	(b) (i)	the sun / light (1)	1	ignore the sky not food
	(ii)	differentiation (1)	1	more than one answer circled then no marks
	(c) (i)	mutation (1)	1	
	(ii)	any two from: could be used to make plants grow taller / faster (1) so increases size of crops / yield (1) could be used to kill plants / as a weedkiller (1) as the plants grow too quickly (1)	2	ignore protect from disease

Question		Answer	Marks	Guidance
	(d)	cloning <input type="checkbox"/> genetic engineering <input checked="" type="checkbox"/> selective breeding <input type="checkbox"/> tropism <input type="checkbox"/>	1	more than one answer ticked then no marks
			(1)	
			Total	8

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