

# **Mark Scheme for January 2012**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

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 <b>not</b> 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)	<p style="text-align: right;">(2)</p>	2	All 3 correct (2) 1 or 2 correct (1)
		(ii)	half / 50% (1)	1	<b>ignore 23</b>
	(b)		oxygen (1) respiration (1)	2	<b>must be correct order</b>
	(c)		to transport it (all) around the body (1)	1	<b>allow</b> rapid transport of glucose to cells (1) <b>ignore</b> move blood through arteries <b>or</b> blood vessels (1) <b>ignore</b> so blood can flow easily unless qualified e.g. blood can flow easily around the body (1)
			<b>Total</b>	<b>6</b>	

Question		Answer	Marks	Guidance
2	(a)	carbon monoxide (1) tar (1)	2	<b>allow</b> CO / particulates / cyanide / nitrogen oxides / carbon dioxide / CO <sub>2</sub> <b>ignore</b> nicotine / carcinogen
	(b)	(i) 3.4/ 0.25 or 3.4/0.50 <sup>2</sup> (1) BUT 13.6 (2)	2	<b>allow</b> 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 <b>or</b> dosage correct / check it works (1)	1	<b>allow</b> they might be dangerous <b>ignore</b> may affect body / organs unless qualified  <b>ignore</b> check for faults
		(iv) animals harmed in testing / ethical idea e.g. cruel to animals (1)	1	answer must refer to negative aspects of <b>animal testing</b> <b>but ignore</b> just 'because it is tested on animals' <b>allow</b> animals may not behave like humans so unreliable <b>ignore</b> unqualified answers e.g. against religious belief
		<b>Total</b>	<b>7</b>	

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

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

Question			Answer	Marks	Guidance
5	(a)	(i)	Ras Al Khaimah (1)	1	<b>allow</b> Ras
		(ii)	0.5 (2) <b>but</b> 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	<b>allow</b> water vapour / hydrogen sulfide / methane / nitrogen oxide <b>allow</b> correct symbol



Question		Answer	Marks	Guidance
	(d) (i)	<p><b>any three from:</b>            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><b>allow</b> any three correct ideas</p> <p><b>allow</b> more sets of eyelids / more eye lashes (1)</p> <p><b>allow</b> flat feet / webbed feet (1)  <b>ignore</b> just 'to walk on sand'</p> <p><b>ignore</b> stores water / fat in hump</p> <p><b>but allow</b> reference to fat as a food store / source of metabolic water (1)</p> <p>additional marking points:  <b>allow</b> (underside) of body less fur / short fur / thin fur (1)            so heat is lost more easily (1)  <b>or</b>  <b>allow</b> longer fur (on upper side) (1) to keep warm at <b>night</b> (1)  <b>ignore</b> no fur</p>
	(ii)	mammal (1)	1	
		<b>Total</b>	<b>9</b>	

Question			Answer	Marks	Guidance
6	(a)	(i)	photosynthesis (1)	1	
		(ii)	chlorophyll (1)	1	<b>ignore</b> 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> <p>(1)</p>	1	more than one answer circled then no marks
	(c)		<p><b>any two from:</b></p> <p>place the quadrat in a random way / AW (1)</p> <p>count the number inside the quadrat (1)</p> <p>repeat many times / use a number of quadrats (1)</p> <p>calculate mean / average (1)</p>	2	<p><b>allow</b> idea of using a grid / transect / or throwing randomly (1)</p> <p><b>ignore</b> reference to multiplying to get numbers in whole area</p>
<b>Total</b>				<b>5</b>	

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

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	<b>ignore</b> plasma / plasma proteins
		(iii)	(wire must go through the skin) so possible infection (1)	1	<b>allow</b> reference to battery may be damaged / disconnected <b>allow</b> idea of wire disconnecting or breaking <b>ignore</b> ideas that power may fail
			<b>Total</b>	<b>4</b>	

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

Question		Answer	Marks	Guidance
10	(a)	vacuole labelled (1) chloroplast labelled (1)	2	
	(b)	(i) the sun / light (1)	1	<b>ignore</b> the sky <b>not</b> food
		(ii) differentiation (1)	1	more than one answer circled then no marks
	(c)	(i) mutation (1)	1	
		(ii) <b>any two from:</b> 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	<b>ignore</b> 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)	1	more than one answer ticked then no marks
		<b>Total</b>	<b>8</b>	

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