



GCSE

Science B

General Certificate of Secondary Education **B622/01**

Unit 2: Modules B2, C2, P2

Mark Scheme for June 2010

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Question		Expected Answers	Marks	Additional Guidance
1	(a)	idea of increased population / idea of more packaging / idea of more (household) waste produced (1)	1	allow reverse argument allow we have become a throw away society
	(b)	finite (1)	1	more than one answer = 0 allow correct answer ticked, circled or underlined in list if answer line is blank
	(c)	endangered (1)	1	allow phonetic spelling e.g. indangered not in danger
		Total	3	

Question		Expected Answers	Marks	Additional Guidance
2	(a)	net (1)	1	more than one answer = 0
	(b)	leech (1)	1	more than one answer = 0 allow answer indicated on key
	(c) (i)	all 3 bars plotted correctly (1) i.e. B – 26 C – 3 D – 10 +/- ½ square tolerance	1	ignore width of bars
	(ii)	29 (1)	1	allow answer written in table if answer line is blank
	(iii)	C AND idea of the smallest number of (different) species / AW (1)	1	more than one answer = 0 allow 3 must have correct pond and explanation for mark allow least number or less or not many of animals / named organism e.g. fish
	(d)	invertebrates do not have a backbone or spine / vertebrates have a backbone or spine (1)	1	assume answer refers to invertebrates ignore no skeleton / bones allow invertebrates have no spinal cord
		Total	6	

Question			Expected Answers	Marks	Additional Guidance
3	(a)	(i)	carbon dioxide (used) (1)	1	allow correct formula / CO_2 allow mark if correct answer next to question
		(ii)	oxygen (made) (1)	1	allow correct formula / O_2 allow mark if correct answer next to question
	(b)		more carbon dioxide or CO_2 / higher temperature (1)	1	allow more water or H_2O ignore more rain allow more heat or more warmth ignore more temperature or just 'warmth' or more chlorophyll or more surface area
	(c)		starch / oil / fat / lipids (1) for storage (1) or cellulose (1) make cell walls (1) or proteins / amino acids (1) growth / repair (1)	2	to gain second mark use must match the substance they name to its use allow one mark for any use if they do not name a substance allow other possible products e.g. lignin for support allow sucrose for transport (2) allow wax for waterproofing (2) allow chlorophyll (1) for photosynthesis (1) but chlorophyll for food scores (1) ignore chloroplasts but chloroplasts for photosynthesis scores (1)
			Total	5	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	(i) predator(s) (1)	1	allow phonetic spelling e.g. predictor
	(ii)	<p>any two from:</p> <p>eyes at the side of the head / wide field of view (1)</p> <p>camouflage / difficult to see (1)</p> <p>long / strong legs (1)</p> <p>can run fast or hop fast or move fast (1)</p>	2	<p>USE TICKS IN THIS QUESTION answers must be relevant to the kangaroo</p> <p>ignore good vision / binocular vision / eyes on front of head</p> <p>allow big legs</p> <p>ignore feet</p> <p>allow good hearing (1), but ignore big ears allow tail for defence / protection / balance (1)</p>
	(b)	<p>more kangaroos more eagles (1) link more food to increase in eagle population (1)</p> <p>or</p> <p>fewer kangaroos fewer eagles (1) link less food to decrease in eagle population (1)</p>	2	<p>USE TICKS IN THIS QUESTION allow higher level answers e.g. eagle numbers can go up because they can raise more young when there are more kangaroos (2)</p> <p>'lack of food' on its own scores 0</p> <p>must show link between food and population for second mark e.g. more kangaroos means more eagles but fewer kangaroos fewer eagles (1)</p> <p>but more kangaroos means more eagles because eagles have more food (2) allow the numbers go up because they have more food or prey (1)</p>
	(c)	water / mate / shelter / nesting sites (1)	1	allow habitat / territory / space
		Total	6	

Question		Expected Answers	Marks	Additional Guidance
5	(a)	any two from: brick (1) cement (1) clay (1) concrete (1) glass (1) MDF (1) metal (1) plastics (1) slate (1) wood (1)	2	allow named metals used in construction e.g. aluminium / iron / steel allow 'metal' and then a named metal for one mark only allow named plastics e.g. poly vinyl chloride allow straw / reeds allow a named wood e.g. oak allow a named stone e.g. limestone / granite allow water / stones / sand / mud
	(b)	decorate / AW (1) protect (surface) / stops it rusting / corroding (1)	2	allow to colour it / make it look nice
	(c)	can glow in the dark (1)	1	allow so people can see the barrier (at night) / reference to safety ignore to prevent graffiti
		Total	5	

Question		Expected Answers	Marks	Additional Guidance
6	(a)	crust core mantle	2	all 3 correct = 2 1 or 2 correct = 1
	(b)	continental (1)	1	
	(c)	less dense (than the mantle) (1)	1	ignore lighter allow lighter weight (than the mantle) / ora
Total			4	

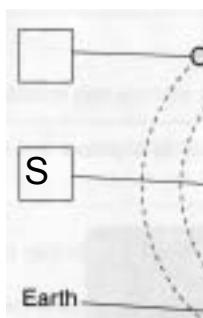
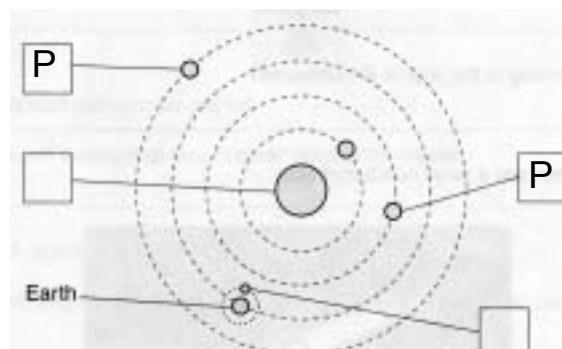
Question		Expected Answers	Marks	Additional Guidance
7	(a)	nitrogen (1)	1	allow N_2 / N allow other ways of indicating answer but answer on answer line takes precedence
	(b)	any two from: kills plants (1) kills aquatic life (1) erodes stonework (1) corrodes metals (1)	2	allow asthma / respiratory problems, but ignore harms people unless qualified allow kills trees allow kills fish allow erodes limestone / erodes buildings allow damages buildings allow erodes statues or corrodes statues, as statues may be made from stone or metal allow idea of having an impact on ecosystems ignore references to fish in the sea ignore kills animals / kills wildlife
	(c)	removes carbon monoxide / AW (1)	1	allow removes nitrogen monoxide / changes carbon monoxide into carbon dioxide / changes nitrogen monoxide into nitrogen allow produces less polluting gases ignore less pollution allow carbon dioxide is less harmful than carbon monoxide
		Total	4	

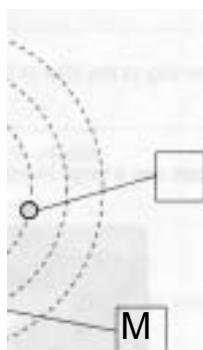
Question		Expected Answers	Marks	Additional Guidance
8	(a)	magnesium + hydrochloric acid → magnesium chloride + hydrogen (1)	1	allow $Mg + HCl \rightarrow MgCl_2 + H_2$ allow mix of correct formulae and names but ignore any balancing allow = or ⇌ instead of → not 'and' or 'amp;' for + allow reactants in either order allow products in either order
	(b)	(i) 80 (seconds) (1)	1	allow any value in the range 61 - 80
		(ii) between 0 seconds and 20 seconds (1)	1	allow any time interval between 0 and 20 e.g. 19 - 20
Total			3	

Question		Expected Answers	Marks	Additional Guidance
9	(a)	copper (1)	1	
	(b)	any two from: iron is more dense (1) iron is stronger (1) iron does not conduct electricity as well (1)	2	answer must clearly refer to iron or aluminium ignore aluminium is lighter but allow aluminium is lighter weight not just iron is strong / dense / conducts electricity – answer must be comparative allow reverse arguments allow iron is magnetic (1) allow iron rusts / iron corrodes more easily (1) allow aluminium is more expensive (1) ignore values simply quoted from table unless qualified
	(c)	ornaments / door handles / (decorative) light switches / (musical) instruments / trophies / keys / AW (1)	1	allow any suitable use ignore pipes / monuments / statues / jewellery ignore properties of brass
		Total	4	

Question			Expected Answers	Marks	Additional Guidance
10	(a)	(i)	convection (1)	1	allow correct answer ticked, circled or underlined in list if answer line is blank
		(ii)	kinetic (1) electrical (1)	2	allow KE or ke ignore movement allow electricity
	(b)	(i)	biomass (1)	1	allow named examples e.g. wood, straw, manure, household waste, biogas ignore wind / waves / gas
		(ii)	coal / (crude) oil / (natural) gas (1)	1	allow peat / coke / petrol / diesel / paraffin / any named fuel from crude oil
			Total	5	

Question		Expected Answers	Marks	Additional Guidance
11	(a)	<p>any three from: fuel burned (1)</p> <p>water heated / steam produced (1)</p> <p>steam drives turbine (1)</p> <p>turbine turns generator (1)</p> <p>generator produces electricity (1)</p>	3	<p>USE TICKS IN THIS QUESTION</p> <p>allow nuclear fuel producing energy</p> <p>ignore 'burning nuclear fuel' or 'fuel heated up'</p> <p>ignore references to water condenses</p> <p>ignore water vapour produced</p> <p>ignore steam turns generator</p> <p>allow steam turns propeller or fan or blades</p> <p>allow turbine powers or spins generator</p> <p>allow higher level answers e.g. coil moves (1) in magnetic field (1) voltage induced (1) or e.g. magnet moves (1) in a coil (1) voltage induced (1)</p>
	(b)	reduce energy waste or power loss or reduce heat waste or reduce cost (1)	1	<p>allow cheaper</p> <p>allow higher level answers e.g. less or low(er) current in the cables or thinner cables can be used</p> <p>ignore electricity or current or voltage lost or wasted</p> <p>ignore references to efficiency</p> <p>not stops energy loss</p>
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
12	(a)	<p>S / Sun in middle box left hand side (1)</p> 	1	any letter in incorrect box loses mark for that letter
	(b)	<p>P / planet in either or both top box on left or top box on right (1)</p> 	1	any letter in incorrect box loses mark for that letter

Question		Expected Answers	Marks	Additional Guidance
	(c)	M / moon in bottom box on right (1) 	1	any letter in incorrect box loses mark for that letter
	(d)	any two from: oxygen (1) food (1) water (1)	2	allow air / suitable atmosphere ignore reference to just space suits allow named type of food allow liquid / drink allow method of communication but ignore mobile phone allow fuel (to get home) allow higher level answers e.g. warmth (suitable temperature) or shielding from radiation
		Total	5	

Question		Expected Answers	Marks	Additional Guidance
13	(a)	Big Bang (1)	1	
	(b)	increasing / getting bigger / expanding / AW (1)	1	
	(c) (i)	Stars are closer to us than the Sun <input type="checkbox"/> Stars give off their own light <input checked="" type="checkbox"/> Stars reflect light from the Moon <input type="checkbox"/> Stars reflect light from the Sun <input type="checkbox"/>	1	if more than one box ticked scores 0
	(ii)	gas or hydrogen cloud (1)	1	allow as dust clouds allow dust allow nebular ignore references to explosion ignore rock
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
14	(a)	tracer / thickness gauge / sterilising equipment / treating cancer / smoke alarms / pacemaker battery / non-destructive testing (1)	1	ignore as energy ignore nuclear power not bombs ignore prevent cancer
	(b)	87 (1)	1	allow $50+14+13+10$
		Total	2	

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