



GCSE

Science B

General Certificate of Secondary Education

Unit **B622/01**: Unit 2: Modules B2, C2, P2 (Foundation Tier)

Mark Scheme for June 2011

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Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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The **Abbreviations, annotations and conventions** used in the detailed Mark Scheme are:

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

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Question		Expected Answers	Marks	Additional Guidance
1	a	A= daisy (1) B= dandelion (1)	2	
	b	i quadrat (1)	1	
		ii light / water / minerals / space / nutrients	1	allow sunlight ignore sun / food
	iii	there are more plant A (than B in the quadrat) / plant A is bigger (than plant B)(1)	1	allow there are 4 daisies and 2 dandelions them refers to plant A unless stated ignore plant A is more healthy allow incorrect plant names if consistent with answer in 1a
	c	photosynthesis (1) chlorophyll (1) oxygen (1) warmth or light (1)	4	must be in correct order not just chloroplasts allow O ₂ but not O allow temperature or heat or sunlight ignore sun
		Total	9	

Question		Expected Answers	Marks	Additional Guidance
2	a	for camouflage / so that prey or seals cannot see them (1)	1	not just because the snow is white allow to blend in with their habitat allow so predators cannot see them ignore to keep them warm
	b	small(er) surface area (to volume ratio) / to lose less heat (1)	1	allow won't get as cold (1) ignore stops them losing (body) heat ignore references to hearing or streamlining
	c i	largest = 5000 and smallest = 1700 (1)	1	both required for the mark allow 5000 and 2000 (1) allow 2300 and 1700 (1) allow 3600 and 1800 (1)
	ii	habitat (1)	1	
	d i	in danger of becoming extinct / dying out (1)	1	allow numbers are very small / rare / not many left / running out ignore numbers are decreasing not they are extinct
	ii	any two from: cause global warming / greenhouse effect / increase in temperatures (1) melting of the ice / idea of loss of habitat (1) harder to hunt (for seals) (1)	2	reference to ozone layer loses first marking point, so max 1 allow cause the Earth or water to warm up or cause the Earth or water to heat up (1) allow carbon dioxide in the atmosphere traps heat (1) allow sea levels rising (1) ignore melting water
		Total	7	

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Question		Expected Answers	Marks	Additional Guidance
3	a	line linking vertebrate to mammal (1)	1	more than one line = zero
	b	rotted / decayed / not mineralised / (they are) soft tissues (1)	1	allow decompose / biodegrade / broken down (1) allow by bacteria or microbial action ignore eroded / degraded / disintegrate / deteriorate / dissolve
	c	parasite (and host) (1)	1	allow parasitism / parasitic
	d	tick in first box	1	
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
4	a	corrosion – does not corrode (1) electrical conduction – good (1) malleability – good (1)	3	allow does not rust allow conductor or conducts electricity allow bendy / flexible / bends easily (1)
	b	water (1) oxygen / air (1)	2	either order allow correct formulae allow (salt) water or moisture ignore rain or acid rain
	c	any one from malleable / ductile / flexible / bendy / does not corrode (1)	1	allow easy to bend (around corners) allow does not rust or corrode allow high melting point allow idea of low reactivity ignore no reactivity or does not react ignore easy to recycle ignore reference to cost ignore strong
		Total	6	

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Question		Expected Answers	Marks	Additional Guidance
5	a	D (1)	1	
	b	C (1) increased rate of reaction (1) remains unchanged (1)	3	allow the rate of reaction has gone to 10 (1) allow same mass at start and end (1) if A or B is given allow 1 mark for increased rate if D is given allow 1 mark for remains unchanged
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
6	a	iron / steel / aluminium / brick / cement / clay /concrete / copper / glass / breezeblock / wood / plastic / MDF / slate / metal (1)	1	allow sandstone / sand / lead / allow straw / reeds (1) allow a named wood eg oak (1) allow a named plastic eg poly (vinyl chloride) ignore water / stones / mud
	b	granite marble limestone (1)	1	
	c	cement (1)	1	not concrete
	d	calcium carbonate (1)	1	if answer line is blank, allow correct answer ticked, circled or underlined in the list
		Total	4	

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Question		Expected Answers	Marks	Additional Guidance
7	a	clockwise from top left crust core mantle	2	all three correct scores 2 one or two correct scores 1
	b	iron / nickel (1)	1	allow correct symbol Fe / Ni
		Total	3	

Question		Expected Answers	Marks	Additional Guidance
8	a	carbon monoxide – poisonous or toxic gas (1) sulfur dioxide – acid rain / kills fish or water life / kills plants / erodes statues / corrodes metals (1)	2	allow can kill people AW ignore harmful or dangerous allow causes breathing problems AW
	b	5 (1)	1	
		Total	3	

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Question		Expected Answers	Marks	Additional Guidance
9	a	(waste is) radioactive (1)	1	allow higher level answers eg ionising radiation / can cause cancer allow gives out alpha, beta, or gamma not just nuclear but allow nuclear radiation ignore radiation on its own ideas of harmful or dangerous are insufficient
	b	need (a lot of) water (1)	1	allow water is needed for steam (1) allow water is needed for cooling (1) allow isolated / too harmful to be in a community / aw (1) ignore less likely to harm humans ignore disposal of (low level) radioactive waste
	c	reduce energy or heat loss / reduce cost (1)	1	allow higher level answers e.g. reduces current ignore stops energy or heat loss ignore reduce electricity loss ignore more efficient allow cheaper (1)
	d	watt (1)	1	ignore W if answer line is blank, allow correct answer ticked, circled or underlined in the list
		Total	4	

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Question		Expected Answers	Marks	Additional Guidance
10	a	light (1) area (1) direct (1)	3	
	b	no power at night / bad weather (1)	1	allow correct examples of bad weather eg cloudy / its not always sunny / need for light for photocell to work allow idea of little electricity generated / not very efficient / not very powerful allow no sun no electricity
	c	0.06 (2) but if answer not correct 3×0.02 (1)	2	ignore units but allow 60 mW (units given) (2)
Total			6	

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Question		Expected Answers	Marks	Additional Guidance
11	a	any two from: crater (1) ejection of (hot) rocks / dust (1) fires (1) Sun blocked out (by dust) (1) climate change (1)	2	not just hole / dent ignore extinction of living things allow ice age allow tsunami (1) earthquake (1)
	b	predict their path / trajectory (1)	1	allow alternative wording e.g. to see if they are on a collision course (with Earth) / to see which way they're going / idea of threat to Earth or to satellites / to see if there's a possibility that they'll get into Earth's atmosphere / idea of to change their path (1) ignore to shoot them down
Total			3	

Question		Expected Answers	Marks	Additional Guidance
12	a	(plotting) compass (1)	1	not iron filings allow (another) magnet unless contradicted by a method eg, move it in and out of a coil
	b	electric current (in a coil) AW (1)	1	allow anything with a current passing through ignore electricity by itself allow lightning
	c	any two from: telecommunications (1) weather observing / prediction AW (1) spying (1) mapping (1) navigation (1) space exploration or monitoring of space (1) monitoring of earth (1)	2	allow television / telephone / Sky ignore satellite dishes on their own not merely weather allow military allow satnav /GPS allow Hubble / space telescope not just space
		Total		4

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Question		Expected Answers	Marks	Additional Guidance
13	a	beta and gamma (1)	1	allow $\beta \gamma$ both needed any order
	b	any two from: protective clothing / wear safety equipment / goggles / gloves / lab coat (1) use tongs / keep distance / as far away as possible from source / don't point it at anyone (1) short exposure time (1) do not handle (1) use of shielding / keep in lead box / safety screen (1)	2	
Total			3	

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