

Science B

General Certificate of Secondary Education

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

Mark Scheme for June 2012

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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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Annotations

Annotation	Meaning
✓	Correct Response
✗	Incorrect Response
BOD	Benefit of the doubt
NBOD	benefit of the doubt <u>not</u> given
ECF	error carried forward
▲	Information omitted
I	Ignore
R	Reject
CON	Contradiction

Abbreviations, annotations and conventions used in the detailed Mark Scheme

Annotation	Meaning
/	alternate 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
<u> </u>	underlined words which are not essential to gain credit
ecf	error carried forward
AW	alternative wording
ora	or reverse argument

Question			Answer	Marks	Guidance
1	(a)	(i)	a vertebrate and a mammal (1)	1	More than 1 tick scores 0
		(ii)	helps it judge size / distance / binocular vision (1)	1	ignore reference to seeing further
		(iii)	sharp teeth / sharp claws / camouflaged / run fast (1)	1	allow large ears / sensitive ears / better hearing (1)
	(b)		in danger of becoming extinct (1)	1	allow not many of them left alive (1)
	(c)	(i)	Miguel and Rosa (1)	1	allow either order
		(ii)	have the smallest population in 2000 / 2006 (1)	1	Answers must be comparative and be clear that the smallest population refers to later time so: allow decreased (rapidly) and so have the smallest population (1) ignore unqualified they have the smallest population
		(iii)	captive breeding of foxes capturing golden eagles and releasing them a long distance away	1	
	(d)		fossils (1)	1	allow casts / mummies / impressions / bodies in tar or amber or ice / bones / check DNA (1)
			Total	8	

Question		Answer	Marks	Guidance
2	(a)	community (1)	1	
	(b)	carbon dioxide and water on LHS (1) glucose and oxygen on RHS (1)	2	ignore references to chlorophyll and energy allow sugar (1) allow correct chemical symbols e.g. not CO^2
	(c)	light / sunlight / water / minerals / carbon dioxide (1)	1	allow sugar / glucose / space / nutrients (1) ignore Sun ignore food
	(d)	host (1)	1	
	(e)	growth / respiration / repair / to make starch (1)	1	allow to make any named organic molecule e.g. glucose / to make leaves fruit etc / energy (1) ignore reference to making food
		Total	6	

Question		Answer	Marks	Guidance
3	(a)	use of a quadrat (1) count plants (growing inside) (1)	2	allow approximate phonetic spelling e.g. quadrant must refer to counting and imply within quadrat
	(b)	5.0	1	allow 5 (1) allow answer written on line or in the table (1) answer line may contain working and answer shown in table if answer on answer line is incorrect, score 0
	(c)	more daisies grow further from the road (1)	1	allow increases / goes up (1) ignore reference to size of plants
	(d)	sulfur dioxide given off from burning of fossil fuels / burning petrol / from cars (1) more sulfur dioxide closer to the road (1)	2	allow implied link between sulfur dioxide and cars (1) ignore reference to acid rain
		Total	6	

B622/01

Mark Scheme

June 2012

Question			Answer	Marks	Guidance
4	(a)	(i)	B (1)	1	allow correct answer underlined, ringed or ticked if answer line is blank (1)
		(ii)	C (1)	1	allow correct answer underlined, ringed or ticked if answer line is blank (1)
	(b)		binding medium (1) sticks the pigment / paint to the surface (1) solvent (1) thins the paint / allows the paint to be spread (1)	4	job must be correctly linked to correctly named ingredient allow binder / binding substance / AW (1)
			Total	6	

Question			Answer	Marks	Guidance
5	(a)		volcanoes (1) earthquakes / tsunami (1)	2	allow mountains form (1) ignore landslide / cracks in surface
	(b)		iron (1)	1	allow Fe / nickel / Ni / alloy of iron and nickel (1)
	(c)		lithosphere (1)	1	
			Total	4	

Question			Answer	Marks	Guidance
6	(a)	(i)	17.75 (minutes) (1)	1	allow 17.5 to 18.0 (1) allow use of : to indicate minutes:seconds e.g. 17:45
		(ii)	13.75 ($^{\circ}\text{C}$) (1)	1	allow answer in range 13.5 – 14.0
		(iii)	increases / AW (1)	1	allow curing / hardening / reaction time decreases / AW (1) ignore drying
	(b)		any time less than 17.75 (minutes) (1)	1	allow a range of times if range lies below 17.75 minutes (1)
	(c)		H – 18 N – 4 (1)	1	both required
			Total	5	

Question		Answer	Marks	Guidance
7	(a)	iron (1)	1	allow Fe
	(b)	brass (1)	1	
	(c)	Either: copper (1) any two from: tarnishes very slowly (1) shiny (1) strong (1) good thermal conductivity (1) high melting point (1) or aluminium (1) protective oxide layer (1) good thermal conductivity (1)	3	copper / aluminium must be stated to score marks for properties. ignore does not tarnish / it tarnishes allow second strongest ignore relative strength of 4.8 allow third highest conductivity ignore conductivity of 5.7 allow second highest MP ignore MP = 1083 stand alone mark each of the following references to an incorrect property negates a correct property if three or more properties are given: not reference to melting point not reference to dull light grey not references to strength i.e. one correct and one incorrect scores 1 two correct and one incorrect scores 1 two correct and two or more incorrect scores 0
		Total	5	

Question		Answer	Marks	Guidance
8	(a)	renewable (1) convection (1) kinetic (1)	3	
	(b)	absorbed (1)	1	ignore trapped
		Total	4	

Question		Answer	Marks	Guidance
9	(a) (i)	uranium (1)	1	allow plutonium (1)
	(ii)	no global warming (1)	1	allow no greenhouse gases / named greenhouse gases (1) allow does not deplete fossil fuels (1) allow nuclear fuel lasts longer (than fossil fuels) (1) ignore unqualified reference to pollution ignore unqualified reference to improving environment
	(b) (i)	power (output) (1)	1	allow wattage (1) allow 38 million watts (1) ignore kilowatts ignore unqualified reference to voltage / energy / amount of electricity
	(ii)	fermentation (1)	1	allow description of fermentation e.g. mixed with yeast / bacteria (1) placed in a fermenter / digester (1) allow produces methane (1) allow produces gas which can be burned (1)
		Total	4	

Question		Answer	Marks	Guidance
10	(a)	distances (in space) are very large (1)	1	allow ideas that it takes a long time (1) allow idea that there may not be intelligent life forms in space (1)
	(b)	(i) any two from: no water needed (1) no food needed (1) no oxygen / air needed (1)	2	allow no supplies needed if no other reference to food/ water / oxygen (1) allow can withstand extreme conditions / specific condition (1) allow no need to bring spacecraft back to Earth (1) allow no risk to life / safer (1) ignore unqualified reference to cost / distance travelled / time spent in space
		(ii) any two from: temperature (1) magnetic field (1) radiation (1) gravity (1) atmosphere (1) surface features (1) photographs / images / video (1) composition of surface (1) information about possible life forms (1) information about moons (1)	2	allow weather / heat (1) allow gas levels / reference to named gas (1) ignore take samples

Question		Answer	Marks	Guidance																
(c)		<p>all correct (2) two or three correct (1) none or one correct (0)</p> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>black hole</td><td></td></tr> <tr><td>moon</td><td></td></tr> <tr><td>near-Earth object</td><td></td></tr> <tr><td>star</td><td></td></tr> </table> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td></td><td>comet or asteroid</td></tr> <tr><td></td><td>gives off its own light</td></tr> <tr><td></td><td>orbits a planet</td></tr> <tr><td></td><td>not even light can escape from it</td></tr> </table>	black hole		moon		near-Earth object		star			comet or asteroid		gives off its own light		orbits a planet		not even light can escape from it	2	allow correct linking by numbering boxes in table if no lines or lines crossed out
black hole																				
moon																				
near-Earth object																				
star																				
	comet or asteroid																			
	gives off its own light																			
	orbits a planet																			
	not even light can escape from it																			
		Total	7																	

Question		Answer	Marks	Guidance
11	(a)	direct current / constant voltage (implied) (1)	1	allow graph line is flat (1) ignore straight line
	(b)	4V (1)	1	allow -4V (1)
	(c)	transformer (1)	1	ignore step-up / step down
	(d)	magnet coil / wire (1)	1	either order must have both correct
	(e)	heat / hot gases / lost to surroundings / lost to atmosphere (1)	1	ignore sound ignore unqualified reference to wasted / lost
		Total	5	

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