

Additional Science A

General Certificate of Secondary Education

Unit **A218/01**: Ideas in Context (Foundation Tier)

Mark Scheme for June 2011

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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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






Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk





Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
not/reject	answers which are not worthy of credit
ignore	statements which are irrelevant - applies to neutral answers
allow/accept	answers that can be accepted
(words)	words which are not essential to gain credit
<u>words</u>	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	credit alternative wording / or words to that effect
ORA	or reverse argument

Available in scoris to annotate scripts:

	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	no benefit of doubt

	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

- Accept any clear, unambiguous response (including mis-spellings of scientific terms if they are *phonetically* correct, but always check the guidance column for exclusions).
- If a candidate alters his/her response, examiners should accept the alteration.
- Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

e.g. for a one-mark question where ticks in the third and fourth boxes are required for the mark:

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

*This would be worth
1 mark.*

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

*This would be worth
0 marks.*

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

*This would be worth
1 mark.*

d. The list principle:

If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

e. Marking method for tick-box questions:

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.

If there is at least one tick, ignore crosses and other markings. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses. Credit should be given according to the instructions given in the guidance column for the question. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

e.g. if a question requires candidates to identify cities in England:

Edinburgh	<input type="checkbox"/>
Manchester	<input type="checkbox"/>
Paris	<input type="checkbox"/>
Southampton	<input type="checkbox"/>

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third should be blank (or have indication of choice crossed out).

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

MARK SCHEME:

Question			Answer	Mark	Guidance
1	a	i	3700-3800 inclusive (1)	1	
		ii	between 2 and 3 seconds inclusive (1)	1	
	b		D (1) C (1)	2	
	c		gravity /weight air resistance / drag (1)	1	either order ignore friction unless qualified e.g. allow 'friction from the air'
	d		1800 x 7 (1) 12 600 (1)	2	correct answer with no working scores 2 No mark for correct working if accompanied by extra working which is incorrect
	e		kinetic (1) gravitational potential (1)	2	
	f	i	any three from: exhaust gases sent out from rocket/exhaust gases at high speed; rocket engine produces <u>thrust</u> / implies that <u>thrust</u> is a force that makes the rocket move; (thrust) force acts against or is bigger than gravity/weight; rocket engine <u>increases</u> momentum of rocket [not just changes momentum] ; backwards force from gases pushes rocket up / these forces opposite in direction / are an interaction pair; these forces equal in size;	3	accept equivalent answer in terms of momentum e.g. total momentum zero; exhaust gases have momentum; ignore exhaust forces push on the ground; allow downward force for gravity/weight ignore air resistance / drag
		ii	0 / zero / nothing (1)	1	
			Total	[13]	

Question			Answer	Mark	Guidance
2	a	i	any two from: intelligence; memory; language; consciousness; idea of processing data from sense organs;	1	accept phonetic spellings accept responses in any order ignore anything else that is wrong
		ii	synapse (1)	1	
	b	i	cytoplasm membrane (1)	1	both correct responses = 1 mark
		ii	sensory/receptor & motor/effector (neurons) (1)	1	both correct responses = 1 mark accept in either order accept relay for either sensory or motor
		iii	impulses (1) stimulated (1) electrical (1)	3	
	c		spinal cord (1)	1	ignore backbone/spine
	d		$2 \div 30 \times 100$ (1) 6.67% (1)	2	correct answer with no working scores 2 accept 6.6* / "6.6 recurring"/ 6.7 / 7 as fully correct allow 6.6 for 1 mark
	e		any two from: information forgotten at sensory memory stage; information not transferred to short term memory; information not rehearsed; information forgotten at short term memory stage; information not transferred to long term memory; information not retrieved from long term memory;	2	REFER TO INSERT DIAGRAM ignore reverse arguments i.e. how things are remembered ignore 'information not transferred' unless direction given <i>QWC Coherent answer that can be read without hesitation. Ignore missing full stops etc Mark is available for the candidate who has attempted the question meaningfully, even if scores no marks for content PUT A TICK OR A RED CROSS AT MARK ALLOCATION BOX TO SHOW QWC MARK AWARDED.</i>
			QWC	1	

	f	do not transmit impulses; <i>or</i> idea of fewer neurons/ neural pathways; <i>or</i> do not function as well	1	'They' = neuron pathways accept idea of damaged neurons/pathways accept 'harder to transfer information between synapses' reject brains become damaged, must be neurons. reject 'they become weaker'
Total			[14]	

Question		Answer	Mark	Guidance
3	a	extracted by carbon iron zinc	2	extracted by electrolysis aluminium lithium All 4 correct = 2 2 or 3 correct = 1 1 correct = 0 An element in both boxes may not gain credit
	b	noise / traffic / dust / holes (1) limit hours of traffic / hose down lorries /build banks / plant trees (1)	2	Method must be appropriate to the problem for second mark accept earth banks/plant trees as a way of reducing dust A general answer such as 'pollution' does not get the first mark, but as it is a reasonable response it still allows the second mark. If the first part is <u>blank</u> , they can't get the second mark UNLESS they have written the problem as part of the second part. If the first part is <u>wrong</u> , they cannot get the second mark.
	c	ore does not contain very much copper / only small amounts of copper (1)	1	ignore 'contains more waste rock than copper' [ORA] ignore we are running out of copper / isn't much left allow need to remove overburden/rock which contains no ore
	d	reacting with ore/malachite / reuse in the first stage (1)	1	accept used for leaching ignore reuse in the process or reaction
	e	blister: heat/hot air/high temperature (1) electrolysis: electrical energy/electricity (1)	2	ignore for electrolysis

	f	positive (1) electrolyte (1)	2	
	g	malleability (1)	1	
	h	any two from: Copper/ ore is running out; price of/ demand for copper is very high/ used for lots of things/ extraction expensive; ores have lower amounts of copper / are lower quality; named effect of mining ore: traffic, holes, noise, dust; large amounts of energy /power used to extract;	2	Not just '95% has been used', but allow if qualified e.g "95% has <u>already</u> been used" accept 'more people have mobile phones' 'pollution' not enough
		Total	[13]	
		Paper Total	[40]	

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

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Telephone: 01223 553998

Facsimile: 01223 552627

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