

Mark Scheme (Results) March 2010

GCSE

360Science

GCSE Additional Science Structured Paper C2 (5018F/1F)

GCSE Chemistry Structured Paper C2 (5038F/1F)



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Using the Mark Scheme

- 1. This mark scheme gives you;
- * an idea of the type of response expected
- * how individual marks are to be awarded
- * the total mark for each question
- * examples of responses that should not receive credit.
- 2. ; separates points for the award of each mark.
- 3. / means that the responses are alternatives and either answer should receive full credit.
- 4. () means that a phrase/word is not essential for the award of the mark but helps the examiner to get the sense of the expected answer.
- 5. Phrases/words in **bold** indicate that the <u>meaning</u> of the phrase/word is **essential** to the answer.
- 6. OWTTE (or words to that effect) and eq (equivalent) indicate that valid alternative answers (which have not been specified) are acceptable.
- 7. 'Ignore' means that this answer is not worth a mark but does not negate an additional correct response.
- 8. 'Reject' means that the answer is wrong and negates any additional correct response for that specific mark.
- 9. ORA (or reverse argument) indicates that the complete reverse is also valid for the award of marks.
- 10. ecf (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

Marking

- 1. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.
- 2. **Do not** award marks for repetition of the stem of the question.
- 3. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct scientific context.

Amplification

- 1. In calculations, full credit must be given for a <u>bald</u>, correct answer. If a numerical answer is incorrect, look at the working and award marks according to the mark scheme.
- 2. Consequential marking should be used in calculations. This is where a candidate's working is correct but is based upon a previous error. When consequential marks have been awarded write "ecf" next to the ticks.
- 3. If candidates use the mole in calculations they must be awarded full marks for a correct answer even though the term may not be on the syllabus at their level.
- 4. If candidates use chemical formulae instead of chemical names, credit can only be given if the formulae are correct.

Question Number	Answer	Mark
1(a)	H H H H-C-C-C-H H H H (All hydrogen atoms must be shown for this mark)	(1)
	ethene; 3 / three;	(1)

Question	Answer	Mark
Number		
1(b)	ethane and/or propane ;	
		(1)

Question Number	Answer	Mark
1(c)	orange to colourless;	(1)

Question Number	Answer				Mark
2		С	hange in rea	ction	
		faster	slower	no change	
(a)		✓;			
(b) (c)				✓;	
(d)			✓;		
(4)		✓;			
			n more than o d instead of a		
					(4)

Question	Answer	Mark
Number		
	improve yield / replace nutrients (eg nitrates) in soil / provides nutrients to plant / help plants grow / grow faster / grow more / 'feeds' plant lgnore 'healthier plants', 'feeds soil' etc Reject references to pesticides eg 'kills pests'	(1)

Question Number	Answer	Mark
3(b)	ammonia [Reject ammonium] ammonium nitrate [Reject ammonia nitrate] (both needed);	(1)

Question Number	Answer	Mark
3(c)	some get washed into rivers / cause fall in oxygen content / eutrophication / promotes growth of algae /causes fish / water life to die / blue baby syndrome / pollutes (drinking) water supply / (if artificial) food will not be 'organic' [Reject health arguments related to organic];	
	Ignore references to cost Ignore references to 'harms environment', 'wildlife die', 'pollution' etc Reject 'unsafe food', 'unhealthy food'	(1)

Question	Answer	Mark
Number		
3(d)(i)	large molecule / long chain / made from monomers / made from many smaller molecules /repeating units / eq;	
	Ignore references to 'plastic'	(1)

Question Number	Answer	Mark
3(d)(ii)	Landfill: fills up landfill sites / bags do not rot / non-biodegradable / take long time to decay; Combustion: releases carbon dioxide / causes global warming / greenhouse effect; [Ignore poisonous fumes, harmful gases etc] Ignore vague references to causes pollution, bad for environment, litter, wildlife etc	(1)

Question	Answer	Mark
Number		
4(a)	alloys are strong(er) / corrosion resistant / lightweight / better properties (than single metal); Allow do not rust	(1)

Question Number	Answer	Mark
4(b)	27; 12; 2,8,3; (any representation of 2, 8, 3 in this order allowed)	(3)

Question	Answer	Mark
Number		
4(c)	electrons move / sea of electrons / free electrons / delocalised electrons; Must refer to electrons AND their movement or freedom	
		(1)

Question Number	Answer	Mark
5(a)(i)	arrow from outer shell electron on sodium [must be clearly from here or very close to this electron] to outer shell of chlorine [must be clearly going here or headed here - reject if ends exactly on chlorine's outer electron] [this may be evidenced by electron being shown having arrived]; Reject double headed arrows or lines with no arrow-	
	head	(1)

Question	Answer	Mark
Number		
5(a)(ii)	ionic (bond);	
		(1)

Question Number	Answer	Mark
5(b)	NaCl / Na ⁺ Cl [−] ; Allow this as a product of an equation eg Na + Cl → NaCl Reject any other variations	(1)

Question Number	Answer	Mark
6(a)	giant molecular, covalent ;	(1)
Question Number	Answer	Mark
6(b)	covalent; Allow convalent Ignore single (bond), reject double (bond)	(1)
Question Number	Answer	Mark
6(c)(i)	gives out (heat) energy / heat given out / temperature goes up; Allow correct reference to bond making and breaking	(1)
Question Number	Answer	Mark
6(c)(ii)	12 + 2 x 16 (=44) ; Ignore units	(1)
Question Number	Answer	Mark
6(d)	(Conducts electricity): (electrical) wires, microchips, electronic components, computers, mobiles, TVs (Strong): vehicles (cars, bikes, planes), ropes, (body) armour (bullet proof vest, tanks, helmets, protective clothing), tent poles, sports equipment, turbine blades (Other) Medical but not 'drug' etc (used for drug delivery, medical sensor) Inkjet ink Do not allow clothing (except protective clothing), buildings, bridges, general tubes and pipes eg drainpipes Note: candidates are suggesting sensible possible uses, although large scale use may be outweighed by cost. The above list gives some suggestions	(1)

Question Number	Answer	Mark
6(e)(i)	First mark: (atoms of) same element / same number of protons / same atomic number / same proton number / allow reference to carbon example eg both carbon atoms; [Ignore references to electrons] Second mark: different number of neutrons / different mass number / different atomic mass / allow reference to carbon eg carbon-13 has one more neutron;	
	more neutron ,	(2)

Question	Answer	Mark
Number		
6(e)(ii)	group 4 /period 2 / second row / sixth element; Must mention a number, not just the general case	
	Ignore 4 th column	
	Reject incorrect group or period	
		(1)

TOTAL MARK 30

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