

Mark Scheme (Results)

March 2008

GCSE

360Science

GCSE Additional Science C2 (5018H/1H)

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 meaning 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 bold, 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)	Any two from: 1. non-biodegradable; 2. does not rot; 3. therefore persists; 4. uses up space; 5. toxic decomposition products; 6. toxic substances leached out; 7. animals can be stuck in plastic; 8. any other relevant point;	(2)

Question Number	Answer	Mark
1 (b)	Any two from: 1. harder to make / shortage of any crude oil product; 2. need new source of crude oil product; 3. prices rise; 4. any other suitable point;	(2)

Question Number	Answer	Mark
2 (a) (i)	2,8,7;	(1)

Question Number	Answer	Mark
2 (a) (ii)	both same no/seven outer electrons / each short of one outer electron;	(1)

Question Number	Answer	Mark
2 (b)	Any two from: 1. full outer shell/8 electrons in outer shell; 2. much energy needed to use electrons to form bonds; 3. does not gain/ lose electrons;	(2)

Question Number	Answer	Mark
2 (c) (i)	52 / 28 + 24;	(1)

Question Number	Answer	Mark
2 (c) (ii)	chromium/ Cr;	(1)

Question Number	Answer	Mark
3 (a)	2 HCl; s, aq, g, l [Allow 1 error]; [Allow S, AQ, G, L]	(2)

Question Number	Answer	Mark
3 (b)	Any three from: 1. particles gain energy; 2. move faster / more; 3. more collisions; 4. have more (activation) energy; 5. which is energy required for reaction; 6. greater proportion of collisions successful;	(3)

Question Number	Answer	Mark
3 (c)	measure loss in mass/ volume gas produced / use a datalogger / use balance / use gas syringe / use upward measuring cylinder / time reaction / use stopwatch / $\frac{\text{quantity}}{\text{time}}$;	(1)

Question Number	Answer	Mark
4 (a)	1 correct shared pair; rest of molecule correct (with or without inner electrons);	(2)

Question Number	Answer	Mark
4 (b)	in diamond strong / covalent bonds must be broken; in water only weak IMF / molecules easy to separate;	(2)

Question Number	Answer	Mark
4 (c)	(H ₂ = 2 and) H ₂ O = 18; (or 2H ₂ O = 36) ratio 1:1; 20 g → 180 g; Or 4 g → 36 g;; 20 g → 36 x $\frac{20}{4}$ = 180 g;	(3)

Question Number	Answer	Mark
5 (a)	all three gases / N ₂ , H ₂ and NH ₃ / everything; reaction goes both ways/ reaches equilibrium/ reversible/ does not go to completion;	(2)

Question Number	Answer	Mark
5 (b) (i)	increases / more (ammonia);	(1)

Question Number	Answer	Mark
5 (b) (ii)	fewer molecules on RHS / equilibrium moves to RHS;	(1)

Question Number	Answer	Mark
5 (c)	Any three from: 1. higher temperature gives lower yield; 2. higher temperature more expensive; 3. lower temperature slower; 4. 400 °C optimum; 5. 400 °C gives good yield; 6. 400 °C gives yield in reasonable time; 7. maximum output under these conditions;	(3)

	TOTAL FOR PAPER: 30 MARKS	