



**General Certificate of Secondary Education**

**Chemistry 4421**

**CHY3F Unit Chemistry 3**

**Report on the Examination**

*2009 examination – June series*

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**Chemistry**  
**Foundation Tier CHY3F****General**

The standard of responses was a lot higher than last year in all respects. The vast majority of scripts were also concise and very legible.

The mark scheme was flexible enough to allow candidates to express their answers in a variety of ways and still gain marks.

However the following questions proved particularly difficult for over half of the candidates: question 2(c) the colour produced when sulfate reacts with barium chloride; question 6(b) whether energy is released or supplied to break existing bonds and when new bonds are formed; question 6(c)(ii) the energy change that shows the reaction is exothermic; question 6(c)(iii) why oxygen and hydrogen needs a spark or flame to start the reaction; question 7(a) how is carbon dioxide used to make carbonated water; question 8(a)(i) the colour that calcium ions give in a flame test; question 8(a)(ii) the ion which gives a yellow flame; question 8(a)(iv) an instrumental method for detecting elements.

Many of the questions that were less well answered tended to be those that involved recalling specific knowledge, and those that required explanation and the use of specific scientific terms. Candidates do need to make the effort to learn the factual material given in the Specification.

Questions 7 and 8 were standard demand questions and were common with questions 1 and 2 on the Chemistry Higher Tier Paper (CHY3H)

This report should be read in conjunction with the published mark scheme.

**Question 1**

Generally, this question was well attempted. Part (d) proved to be difficult for many candidates.

**Question 2**

- (a) A lot of candidates did not know the colours given by the two sulfates.
- (b) This was quite well attempted although some candidates wrote so no bacteria present.
- (c) This was quite poorly attempted.

**Question 3**

- (a) This was very well answered.
- (b) Quite a few candidates multiplied 4.2 by 25 and got the answer as 105.
- (c) A large number of candidates wrote about large amounts of fat and salt or it was not a balanced diet.

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**Question 4**

Generally, this was quite well answered. Part (a)(i) and (a)(ii) seemed to present a problem for some candidates.

**Question 5**

On the whole, candidates scored quite well on this question.

- (c) This was quite well answered, with many understanding the principles involved. Quite a few students wrote chlorine is higher up in the reactivity series/periodic table.

**Question 6**

- (a) The question asked for a word equation and many of those who wrote a word equation got it right.

A large number of candidates included other substances in the equation eg carbon dioxide. Too many opted for symbols and then made small errors which resulted in them scoring no marks. Others wrote unbalanced equations. The most common error was  $\text{H}_2 + \text{O} \rightarrow \text{H}_2\text{O}$

- (b) (ii) This was quite poorly answered.
- (c) (iii) A large number of candidates wrote it is a catalyst. Some just wrote it supplies heat for the reaction, so they can react or particles start to move faster. Only a few actually used the term activation energy.

**Question 7**

- (a) Very few candidates scored the mark here. The vast majority of candidates opted for bubbling, passing, pumping, reacting or dissolved.
- (b) (i) The vast majority of candidates made a good attempt at drawing a smooth curve. Quite a few candidates drew multiple lines.
- (b) (ii) This was quite well attempted. Many candidates did not realise that on the vertical axis, each small square represented 0.05g.
- (b) (iii) A large number of candidates made mistakes in transferring their figure to the calculation. A lot of them rounded up or down the 0.55 figure from the graph. Quite a few multiplied or added the figures together. Others just wrote 0.55 as their answer.
- (c) (i) The majority of candidates were able to read off the correct value from the graph.
- (c) (ii) Most candidates managed to score at least one mark, usually for the curve or straight line. The next mark usually came from limited data. Very few mentioned
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extrapolation. Quite a few candidates wrote there were errors in carrying out the experiment or the experiment was not repeated.

### Question 8

- (a) (i) This was poorly answered.
- (a) (ii) This was also poorly answered.
- (a) (iii) The most common answers that scored marks here were accurate and fast. Quite a few candidates mentioned that it was cheap and safe. Some wrote so that it doesn't harm the baby.
- (a) (iv) This was quite poorly answered and not attempted by many candidates. The most common incorrect answers were titration, flame test, universal indicator, lime water, UV and IR.
- (b) This was quite well answered and the vast majority of the candidates were able to pick out the relevant points from the passage. The only major misunderstanding was stating that women didn't want to breastfeed.

### Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.