



**General Certificate of Secondary Education**

**Applied Science (Double Award)  
4861**

**APSC/2H Science for the Needs of Society**

**Report on the Examination**

*2009 examination – June series*

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**General comments**

This paper was generally well answered, with more candidates tackling the equations and fewer missing questions out. The longer answer questions were less well answered, (4(c) – ‘describe selective breeding’, 7(d) – genetic diagram and 8(a) – fractional distillation).

As expected the higher tier candidates have a much better grasp on how nerves work although they do need to be clearer on the extraction of metals.

**Question 1**

- (a) (i) Only a few candidates made the link between the doctor’s statement with the fact that TB is a lung infection. Many seem to be referring to what they may have seen on the TV regarding how swine flu is spread and made incorrect links.
- (a) (ii) A lot of points made seem to be from recent campaigns regarding swine flu, including references to ‘catch it, bin it’, cleaning door handles etc. Candidates should be encouraged to make their answers specific to the example given. A worrying number think that sneezing into your hands is as good as using a tissue.
- (b) (i) This was mainly answered well. Main mistakes were to mix up the function with other components of blood, e.g. fights infection or carries nutrients.
- (b) (ii) Generally answered well.
- (c) Answered reasonably well with many candidates being able to complete the sentences.
- (d) Answered well by the majority of candidates.

**Question 2**

- (a) (i) Answered well.
- (a) (ii) Most candidates suggested not extract as much limestone in the first place, rather than reducing the impact of extracting it.
- (b) Candidates either answered well, or appeared to guess by talking about mixing with random chemicals.
- (c) (i) Mainly answered well.
- (c) (ii) Very few candidates appeared to know this equation.
- (d) (i) Hardly any candidates got this mark.
- (d) (ii) The few candidates who gained a mark for this question only got the ‘sand and water’ mark.
- (d) (iii) This was generally answered reasonably well, although many candidates did not read the question properly and linked their answer to what had already been mentioned.

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**Question 3**

- (a) (i) Answered well by the majority of candidates.
- (a) (ii) Answered very well by almost all candidates.
- (a) (iii) Generally answered very well. The main mistakes being from candidates giving non-renewable resources. Also, teachers should make a point of telling candidates to refer to solar not sun or light and hydroelectric not water.
- (b) Most candidates got this question correct.
- (c) (i) A reasonable number of candidates got this correct. Some guessed the formula and therefore did not gain the mark, because they used lower case or wrote the number as a superscript.
- (c) (ii) Most candidates received at least one mark for this by mentioning renewable resources. A number of candidates seem to think we need to **use** less polluting gases (not make them).

**Question 4**

- (a) Many candidates confused herbicides with pesticides or fertilisers and so did not gain the mark.
- (b) (i) Answered well, using alternatives to other chemical uses.
- (b) (ii) Generally answered well.
- (c) Some clear and concise descriptions were seen. Some candidates obviously misread the question and made assumptions from the picture provided, answers included 'weigh the chicken' and 'can kill it when it's big enough' or just descriptions of intensive farming for chickens.
- (d) A number of candidates mixed up intensive farming with organic farming. A number also appeared to be trying to get hints from the rest of the paper and referred to selective breeding.

**Question 5**

- (a) (i) In general, this question was not answered particularly well. A lot of references were made to melting gold or the fact that it is shiny so easier to see. There appears to be a lot of confusion between a compound and an ore.
- (a) (ii) Most candidates gained the heating mark, without saying anything about reduction or reducing agents. Those who knew about reduction often got all three marking points.
- (b) (iii) Most candidates knew this. The most common mistakes being obvious guesses (L, Le or Ld).

- (c) (i) Generally answered quite well. Some confusion was evident as some candidates stated that high melting point and high boiling point was a reason for copper's use as pipes.
- (c) (ii) There seems to be a lack of familiarity with the word 'alloy' with many candidates giving a pure metal, instead of an alloy.
- (d) A large number of candidates misread the question and gave ways of reducing the extraction in the first place. Some were simply not thinking in realistic terms (extracting by hand is not a viable option).

### Question 6

- (a) Generally answered quite well.
- (b) (i) A significant number of candidates got this correct, although many appeared to be guessing by performing random calculations to include all the values given.
- (b) (ii) Most candidates got this right, or their answer matched that for part (b)(i).
- (c) A lot of very vague answers were given (e.g. they are safer, more effective, more reliable), which were not specific enough to get the marks.

### Question 7

- (a) Most candidates could identify the nucleus, but there were many errors with other labels, candidates either naming components of plant cells or random words from nervous reactions (e.g. stimulus, response).
- (b) (i) Generally answered very well, although few candidates mentioned 'impulses' referring generally to 'messages'
- (b) (ii)/(iii) Answered well by most.
- (b) (ii) There was some reference to the tail helping the nerve cell to move or the long shape making it easier for the nerve to travel to the brain or around the body. Teachers need to address this misconception – the nerve cell itself doesn't move.
- (c) (i) Most candidates were able to answer this question.
- (c) (ii) Most candidates did not know the word 'allele'
- (d) This was a good discriminator. Candidates did not read the question properly: They had to show evidence that inheritance was 50%, which they were writing down, even when the diagram they had drawn did not show 50%.

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**Question 8**

- (a) Many candidates appeared to have a vague idea of the main points, but did not know enough to get the marks. Many talked about the fractions having different temperatures or melting points and at this level they should be using important key terms.
- (b) (i) This was not answered very well, hydrocarbons only contain carbon and hydrogen.
- (b) (ii) Most candidates were able to write the formula for octane.
- (c) Few candidates got 2 or 3 marks. Some candidates were writing chemical formulae in the spaces provided, rather than numbers as requested.
- (d) This was generally answered well, although vague answers ('more environmentally friendly' or 'better for the environment') were given. At this level more specific advantages are needed.

**Question 9**

- (a) (i) Generally answered well. The most common error was to describe the trend instead of explaining it.
- (a) (ii) Considering the formula had been given, it was surprising how many candidates gave the wrong answer.
- (b) (i) Generally answered well, although many candidates repeated themselves and only gained 1 mark (e.g. brakes and brake pads).
- (b) (ii) Again, a number of candidates gave the same marking point twice. Also, some did not read the question properly and referred to brakes or tyres.
- (b) (iii) This was generally answered quite well. More candidates than in the past are writing complete and valid ways of investigating a problem.
- (c) Answered very well.