



General Certificate of Secondary Education

Applied Science 4861

APSC/2F Science for the Needs of Society

Report on the Examination

2007 examination – June series

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General Comments

Apart from a few candidates who left large sections of the paper blank there was an encouraging response to the first six foundation-level questions. The structure of these questions made parts of each one of them accessible to even the weakest candidates.

Questions 7, 8 and 9 are common with the Higher tier paper. These are intermediate-level questions pitched at Grade D/C. As expected, weaker candidates found this the most difficult section of the paper and there was a much greater number of sections left blank. A few Foundation tier candidates performed well on the intermediate-level questions and it might be appropriate for these candidates to attempt the Higher tier paper at a later stage in the course.

Questions involving symbols and formulae were poorly answered. Candidates are expected to know the symbols and formulae given in Appendix D of the specification.

Question 1

A large proportion of candidates were able to score the mark for **1(a)(i)** because credit was given for the symbol N. Very few candidates could name argon (**1(a)(ii)**). Relatively few candidates scored both marks for **1(a)(iii)**, although some scored 1 mark for totalling the percentages in the table.

Although a good proportion of candidates scored the marks for **1(b)(i)** and **1(b)(iii)**, **1(b)(ii)** proved to be more difficult.

Question **1(c)(i)** was well answered, most candidates being able to name a fossil fuel. Question **1(c)(ii)** was also well answered and many candidates benefited from the fact that the correct formula for carbon dioxide was awarded a mark. There were many vague answers in **1(c)(iii)** about pollution and widespread misunderstanding about damage to the ozone layer meant that many failed to score on this question. Melting of polar ice caps was the most common correct answer. Question **1(c)(iv)** was answered well, although it was surprising to see a few candidates naming a fossil fuel.

Question 2

A long list of infectious diseases in the mark scheme enabled a large proportion of candidates to score the mark for **2(a)(i)**. Breathing and food were the most popular correct answers to **2(a)(ii)**. Some candidates stated that touching someone was a way to become infected but this was given credit only when coupled with an open wound or contact with the mouth. A good proportion of candidates scored the mark for **2(a)(iii)**. Damage to body cells was the most popular answer.

There was some confusion in **2(a)(iv)**, with platelets forming a barrier to infection, but many candidates knew that white blood cells attack microorganisms and a small proportion mentioned the production of antibodies.

Nearly all candidates scored marks for **2(b)**. Washing hands, wearing protective clothing and isolating the patient were common accepted answers.

Antibiotic was a common answer to **2(c)(i)**. The most frequently seen answer to **2(c)(ii)** was penicillin but a large number of candidates incorrectly chose an analgesic. Answers to **2(c)(iii)** show that many candidates know about bacteria developing resistance but a vague answer like ‘the bacteria are changing’ was not accepted.

Question 3

Although high melting point was the most common answer to **3(a)(i)**, each one of the three other properties was often chosen. Wood was rarely selected as the answer to **3(a)(ii)** but polymer was quite a common wrong answer. Although many candidates scored 1 mark for **3(b)(i)**, 2 marks was rare. Iron and copper were common correct answers to **3(b)(ii)**.

Most candidates scored at least 1 mark for **3(c)**.

Brass, bronze and steel were common incorrect answers to **3(d)(i)**, wiring was commonly seen as the answer to **3(d)(ii)**, and it was disappointing that so few candidates could complete the relatively simple calculation in **3(d)(iii)**.

Question 4

The response to **4(a)** was pleasing – a good number of candidates scored both marks.

Question **4(b)(i)** only makes sense if the candidate completed **4(a)**. Fortunately, a good proportion of those who obtained an answer in **4(a)** followed it up by a logical response in this question. Many candidates scored both marks for **4(b)(ii)**.

A good number of candidates managed the simple substitution of values into the formula for **4(c)(i)**, and even candidates who used the value of power in watts could still score 1 mark. Some candidates gained no marks because of simple arithmetical errors. A small proportion used their value from **4(c)(i)** to successfully calculate cost in **4(c)(ii)**. A common error was: 9p for 1 hour, therefore 2 hours cost 18p.

Question **4(d)** was well answered. The full spread of marks was seen and almost all candidates scored marks.

Question 5

Candidates scored high marks on this question – full marks were not uncommon.

Almost all candidates selected the liver in **5(a)**, although the brain was less well known.

Nicotine was a common answer to **5(b)(i)** but many wrote tobacco and failed to score the mark. Tar was the most popular choice for **5(b)(ii)** but many candidates think that it blocks blood vessels rather than airways.

Sleeping tablets was the most popular response to question **5(c)(i)**, and addiction a common answer to **5(c)(ii)**. A wide range of answers was accepted to **5(c)(iii)** and most candidates scored this mark.

Although many good answers were seen to **5(d)**, the answer had to be linked to the named drug and unfortunately a number of candidates failed to name a drug so they could not be awarded any marks.

Question 6

This was the least well answered of the foundation-level questions.

The full range of marks was seen on question 6(a). The use of infrared radiation for TV remote controls was the most well known use.

Question 6(b)(i) was poorly answered, very few candidates scoring more than 1 mark. A good proportion of candidates know that energy is related to frequency (6(b)(ii)).

The part of the specification examined in 6(c) was not well known. Surprisingly, delta was a more popular choice than beta and atoms or molecules more popular choices than ions.

Question 7

Question 7(a) was a relatively easy question on which many scored the mark. Legs and brain were fairly common wrong answers.

Most candidates answered 7(b)(i) well. Cell wall was the most common wrong answer. Many scored 1 mark for describing the long shape of the cell, in 7(b)(ii), but relatively few scored the second mark for stating that the nerve cell has many connections or is insulated.

Question 7(c) was quite well answered. Many candidates scored 1 mark for mentioning glucose. Some scored full marks because they knew the involvement of glucose and oxygen in respiration. Answers that only mentioned oxygen being carried to the muscle cells were not given any credit.

Although a good number of correct answers to 7(d)(i) were seen, 'the hormone is carried in the nerves' was a fairly common wrong answer. Some candidates failed to answer 7(d)(ii). Insulin and the sex hormones were the most popular answers and the candidates that chose them often scored both marks.

Question 8

Many correct answers were seen to 8(a), the rotting of wood being the most popular answer. The flammability of wood was often given as a disadvantage of using wood but was not credit-worthy. Some candidates think that wood is a poor insulator and that it is not a strong material.

Many candidates failed to score the mark for 8(b)(i) because they focussed on the strength of the materials rather than the rigidity. Some completely missed the point and centred their response around corrosion and thermal conductivity. It was disappointing that so many candidates left 8(b)(ii) blank when a simple definition of a composite was all that was required.

Although sodium carbonate was rarely seen as the answer to 8(c), sand and limestone were common correct answers. Water, combined with sand, was a common wrong answer.

Although some very good answers to 8(d) were seen, some candidates only scored one of the two marks because they restricted their answer to a description of the better insulating properties of double glazing.

Question 9

Question 9(a) was poorly answered. Few candidates described the formula for the calculation of speed.

Most candidates scored well in 9(b). No marks could be awarded to candidates who chose speed as a factor that affects stopping distance as this information was provided in the stem of the question.

Most scored well in 9(c). Driving test and use of the breathalyser were common correct responses.

Answers to 9(d) demonstrated that the majority of candidates did not know how to calculate speed when provided with distance and time.

Few correct responses to 9(c) were seen. Many candidates related their response to volume rather than frequency.

Mark Ranges and Award of Grades

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