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ASSESSMENT and QUALIFICATIONS ALLIANCE

## General Certificate of Education

# Applied Science 8771/8773/8776/8777/8779

## SC05 Choosing and Using Materials

# Report on the Examination

*2010 examination - June series*

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## General Points

The paper appeared to differentiate quite well and produced a fairly good spread of marks. The vast majority of candidates attempted every part of every question.

As in the past, the standard of mathematical calculations was disappointing. It was also very disappointing to find, yet again, that those questions involving straightforward recall of standard definitions were poorly answered by many candidates. A total of 12 marks out of 80 (i.e. 15%) fell into this category.

Again many candidates were careless in their wording and lost marks as a result. For example, describing a composite material as a mixture of ***one*** or more materials.

## Question 1

The ability to link the structure of materials to their properties is not being grasped by the majority of candidates. Only 10% of candidates obtained full marks on this question. This was disappointing, for what should have been a gentle introduction to the paper.

## Question 2

This question was answered quite well by the majority of candidates.

## Question 3

(b)(ii) Most candidates stated that the benefit of using a composite material is that it is stronger than the individual components. This did not score. A better answer is that a composite material gains useful properties from each component.

(d)(i) A surprisingly large number of candidates did not know that stainless steel is an alloy. The calculation in (d)(iv) was very poorly answered.

## Question 4

(a) As already mentioned the definitions asked for in this question were poorly known. About 20% of the candidates did not score at all here.

(b)-(e) The answers to these questions were to be found in the article at the beginning of the question. It is recommended that centres practice the comprehension questions with their candidates using past papers and mark schemes.

(f) The Young Modulus calculation still presents a problem to many candidates despite it being a well established question.

## Question 5

(a) The definition of thermal conductivity was largely unknown.

(b) The majority of candidates scored reasonably well on the graph. However, a significant number of candidates do not know the difference between the *x*-axis and the *y*-axis. The phrase ‘line of best fit’ seems to mean only a straight line to many candidates.

(c)(ii) A few candidates did not describe the trend shown in the graph as 'the thermal conductivity increases as the specific heat capacity decreases' (or the converse).

(c)(iii) The vast majority of candidates identified the anomalous result.

(d) This question was very poorly answered. A lot of candidates talked about the metal window frames becoming so hot that it could cause the glass to break or people could get injured touching them.

**Question 6**

(a) The majority of candidates could correctly describe plastic deformation.

(b) This question was answered badly especially parts (ii) and (iii).

(c) Very few candidates realised that this question was about alloying.

(d) It was pleasing to see that a large number of candidates were knowledgeable about the heat treatment of metals.

**Question 7**

(a) Less than half of all candidates knew that point X on the graph represented the elastic limit. The most common incorrect answer was 'yield point'.

(b) This question was answered quite well.

(c)&
(d) These questions were poorly answered.

(e)(i) It was extremely disappointing to see how few candidates could name the force acting on a stretched spring as 'tensile force' or 'tension'.

(e)(ii) This question was very well answered.

(e)(iii) Only a handful of candidates answered this question correctly.

(f) Only 25% of candidates obtained half marks or above for this question. Surprisingly, although the question was about electrical conductance, a few candidates described an experiment to determine the ultimate tensile strength of the three copper wires.

## Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.