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Examiners' Report

Principal Examiner Feedback

November 2020

Pearson Edexcel GCSE

In Combined Science (1SC0) Paper 2PF

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### Question 1

(b)(ii) Most candidates were able to substitute values into the equation for charge but many of these did not convert the time to seconds.

(c) The rearranged form of this equation was given in the question but the equation itself was quite complex. An encouraging number of candidates were able to arrive at the correct answer.

### Question 2

(a)(ii) A very high percentage of candidates obtaining the correct numerical answer.

(b)(i) A pleasing number of candidates were able to substitute correctly, and hence were able to obtain the correct answer. The most common mistakes were substituting 0.9 (rather than 0.09) and putting an incorrect number of zeros on the answer line (0.81 and 0.0081 were both seen leading from correct substitutions).

(b)(ii) This is the first question on the paper where candidates seemed to struggle, due to a seemingly weak grasp of the concept of energy. Most were able to identify a relevant energy store, often using weak or imprecise language, but few were then able to describe a relevant transfer.

(b)(iii) Overall, candidates seemed to have a reasonable practical understanding of the situation, and many were able to provide an adequate response here. A few candidates were seen to be repeating the stem of the question, and no marks are awarded for this.

### Question 3

(a) Many candidates were able to give reasonable explanations in terms of steel being magnetic and aluminium not being magnetic. Common errors included getting this the wrong way around or attempting to answer the question without referring to which material was magnetic and which wasn't.

(b)(ii) Most candidates here were able to identify the effect / presence of a magnetic field, however, were normally unable to identify the effect of distance on the strength of the field. Paraphrasing or duplicating the stem of the question was again seen.

(b)(iii) Answers seen here often did not relate to the experiment involved. Candidates should be encouraged to think logically when responding to experimental method questions and should try to consider taking a step-by-step approach (which could be followed by another student) as a highly organised structure often helps candidates to include almost all the relevant points.

### Question 4

(a) Correct answers were rarely seen here. Many candidates knew that the voltmeter was in the wrong position, but few went on to say that it should be connected in parallel with resistor X.

(b)(i) Most candidates failed to realise that the voltage across the  $22\ \Omega$  resistor was  $3.0 - 2.1 = 0.9\text{ V}$ .

(b)(ii)-(iii) Across these two questions, candidates were generally better with part (iii) than part (ii). Unfortunately, some candidates wrote the answer to part (iii) in the response space for part (ii). With "show that" questions, the best approach is to try to perform the calculation to at least one more decimal place than the value in the question, and use the stem to check their response, rather than putting all the numbers in the question into an equation.

(b)(iv) Very few candidates showed that they knew how to calculate resistance in a series circuit.

(b)(v) The most common response for this question was  $0.246\text{ J}$ , caused by candidates not converting the unit of time into seconds.

### Question 5

(a)(i) Most candidates did not understand that different methods are needed to obtain the volumes of regular and irregular objects, trying to find the dimensions of the copper via measurement, which isn't appropriate here. Those candidates who used the correct method usually did so sufficiently well to obtain most of the marks available.

(a)(ii) This question produced a large mix of incorrect responses, usually due to incorrect recall of the equation. Those who did recall the equation correctly usually went on to score both marks.

(b)(i) Few candidates were able to rearrange the given equation. Most of the candidates who scored 1 mark did so for calculating the temperature rise.

(b)(ii) Many were able to state at least one way in which the experiment could be improved.

(c) Most candidates here understood that the coil of wire was being used to heat the water.

### Question 6

(a) Most candidates scored the first mark for saying the force increased with speed but only a few carried on to say that this was not a linear relationship (or words to that effect).

(b) The stumbling blocks for most were the recalling of the equations in (i) and (iii) and the fact that the answer to (ii) was the same as the answer to (i).

(c) This question enabled candidates to access the full range of marks. Candidates generally were able to identify a relevant energy store (and hence obtain a level 1 answer), but, similarly to 2bii, candidates often did not go on to describe a valid transfer, limiting them at this level. Only the very strongest candidates were able to obtain 6 marks on this question.