

# Examiners' Report/ Principal Examiner Feedback

November 2009

IGCSE

IGCSE Physics (4420) Paper 03

IGCSE Science (Double Award)(4437) Paper 09

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### Question 1

The circuit in (a) often lacked an ammeter. The voltmeter which was not requested until part (d) was often erroneously placed in series at this stage.

Some thoughtful circuits with cells in parallel with their own switches were occasionally seen or even two separate but identical circuits. Common errors were two lamps in series or two cells in series sometimes facing in opposite directions.

The voltmeter in (b) was well read.

In part (c) some correct answers did not circle two sources as requested.

Candidates often ruled out the 0 - 1.5V supply because 'it can give a voltage anywhere in that range and so would probably be below 1.5 V or 'could only supply a.c. and the torch needs d.c.' although some did state that it 'wouldn't fit' or 'needed to be plugged in'. The 9 V battery was often rejected for the right reasons and the rechargeable cell often had false accusations levelled at it.

Less than half of the responses saw the voltmeter connected correctly. The rest placed it in series or ignored it.

In (e) many referred to the characteristics of the LDR stating the 'resistance would be big' rather than saying why other lights should not be present.

### Question 2

Parts (a) scored surprisingly badly with many thinking that Figure 2, with the object completely submerged, would give the reading of the mass of the object.

By contrast part (b) scored well with most candidates choosing Figures 1 and 2 to find the volume of the object and showing the correct calculation of volume in (iii).

The calculation of density was rarely correct with a minority of candidates showing an appreciation of significant figures.

Part (d) was extremely well answered with many candidates bolstering their answer by quoting a figure of  $108 \text{ cm}^3$  to show that they had fully understood the problem presented to them.

Part (e) was well answered although many wrote about immersing the object in water even though they had been asked for a different method.

The piece of equipment was correctly named although a lot of 'scales' are still seen.

### Question 3

In part (a)(i) about half correctly identified the normal.

The angles in (ii) and (iii) were required within  $\pm 0.5^\circ$  and were generally correct although the value of an obtuse angle often appeared.

The required equipment was correct unless 'light box' or 'torch' appeared

The graph work was of mixed quality with plotting usually good. Occasionally axes were wrongly labelled with failure to plot or circle the anomalous point. Frequently the drawn curve went through the anomalous point about whose occurrence few candidates had any idea.

#### Question 4

The thermometer was correctly read in part (a).

In part (b) candidates knew that the thermometer should not be read while the temperature was rising although most thought that it had reached its maximum after two minutes.

Candidates could often name at least one item of equipment but rarely two.

However in (c)(ii) many factors that did not have to be kept constant, such as the 'volume of the water', were listed and it was evident in the method in (iii) that the thermometer was often placed in the water instead of at a constant distance from each side.

In part (d) hardly any candidates could offer a suggestion usually moving the thermometer nearer the cube.

Some very perceptive answers, where thermopiles or the equivalent were suggested as extra equipment in (c)(i) and subsequently described in the method in (iii), were suitably rewarded.

## PHYSICS 4420, GRADE BOUNDARIES

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Option 1: with Written Alternative to Coursework (Paper 3)

	A*	A	B	C	D	E	F	G
Foundation Tier				53	43	33	23	13
Higher Tier	81	68	55	43	32	26		

Option 2: with Coursework (Paper 04)

	A*	A	B	C	D	E	F	G
Foundation Tier				N/A	N/A	N/A	N/A	N/A
Higher Tier	83	70	57	45	34	28		

No candidates at foundation tier entered coursework so there are no grade boundaries for this category.

**Note:** Grade boundaries may vary from year to year and from subject to subject, depending on the demand of the question paper.

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