

Examiners' Report/ Principal Examiner Feedback

November 2010

GCSE

360Science

GCSE Science
Multiple Choice Paper P1a (5009)

GCSE Physics
Multiple Choice Paper P1a (5045)

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5009 Science/ 5045 Physics (Multiple Choice P1a) Examiners' Report

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Foundation tier

Performance on this paper was variable from the start. Although 76% of candidates correctly associated a higher voltage with spinning the magnet of a dynamo faster (question 2), as few as 55% realised that a magnet had to move near a coil to produce a current and that 'a wire' was insufficient to replace the magnet (question 1). 74% remembered that the current in a wire is a flow of electrons but then only 31% identified the circuit symbol for a thermistor.

Power and energy transfer is another area of concern. As few as 33% knew that power was the rate of transfer of electrical energy, with an almost equal number of candidates opting for current. Even worse was the 85% who did not know the association between W and J/s. More than twice as many subtracted the numbers given and as many as 2 ½ times went for adding the two numbers.

When supplied with an equation which involves the multiplication sign, the temptation is to simply multiply two numbers without thought. To calculate the power of a kettle, nearly as many chose to multiply the given current by the frequency of the supply as by the supply voltage.

In general, ideas about batteries were well understood.

Overlap Questions

As expected, all overlap items were better answered by higher tier candidates. The smallest difference concerned the decrease in validity of an investigation by reducing the range of values. The largest difference and the best discriminator within each group was for the graphical determination of pay-back time, with 75% of higher tier candidates gaining this mark.

An example in this section, illustrated the difficulty that many candidates find in dealing with units and particularly powers of ten. Nearly 60% of candidates seemed to think that 100 W is 1 kW and so simply multiplied the cost per kilowatt hour by the time: 60p to keep a 100 W bulb on for 3 hours does seem excessive. The use of 'milli-' also often causes problems. Teachers should encourage candidates to change to the base unit right at the start.

Higher tier

Candidates coped very well with the 'Power from water' scenario. It was particularly pleasing to note that as many as 78% of candidates were able to apply the (to them) new equation which they were given. By way of contrast, the next two questions, which used equations familiar to candidates, were poorly answered. In addition, the application of specification statement P1a 9.10 to choose the circuit diagram appropriate for finding the resistance of a diode (the symbol of which was given)

proved challenging. Many candidates chose a circuit for measuring the (constant) voltage across the battery as the answer, while 23% opted to use an ammeter to short circuit the battery. These basic errors may not be so common if candidates have done the experiment.

Grade Boundaries - November 2010

Multiple Choice Papers - GCSE Science

Raw Mark Grade Boundaries

5005/5025	Max mark	A*	A	B	C	D	E	F	G
H	24	19	17	15	13	9	7		
F	24				18	15	12	9	6

5006/5026	Max mark	A*	A	B	C	D	E	F	G
H	24	17	15	13	12	8	6		
F	24				15	13	11	9	7

5007/5035	Max mark	A*	A	B	C	D	E	F	G
H	24	18	15	12	10	7	5		
F	24				17	14	11	8	5

5008/5036	Max mark	A*	A	B	C	D	E	F	G
H	24	19	17	15	14	9	6		
F	24				18	15	12	10	8

5009/5045	Max mark	A*	A	B	C	D	E	F	G
H	24	16	14	12	11	8	6		
F	24				14	12	10	8	6

5010/5046	Max mark	A*	A	B	C	D	E	F	G
H	24	17	15	13	11	8	6		
F	24				17	14	12	10	8

Uniform Mark Grade Boundaries for these units

	Max UMS	A*	A	B	C	D	E	F	G
H	40	36	32	28	24	20	18		
F	27				24	20	16	12	8

Note: On higher tier papers, the "allowed" grade E is calculated as half a grade width

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