

# Examiners' Report/ Principal Examiner Feedback

## Summer 2010

IGCSE

### IGCSE Physics (4420) Paper 1F

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information please call our Customer Services on + 44 1204 770 696, or visit our website at [www.edexcel.com](http://www.edexcel.com).

If you have any subject specific questions about the content of this Examiners' Report that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:

<http://www.edexcel.com/Aboutus/contact-us/>

Alternately, you can speak directly to a subject specialist at Edexcel on our dedicated Science telephone line: 0844 576 0037

(If you are calling from outside the UK please dial + 44 1204 770 696 and state that you would like to speak to the **Science** subject specialist).

Summer 2010

Publications Code UG024298

All the material in this publication is copyright  
© Edexcel Ltd 2010

## 4420 Paper 1F Physics Report - Summer 2010

### Question 1

This question was answered very well and in particular the calculation and units in (c).

### Question 2

The drawing of the circuit in (a) was very well done although in (b) only about 60% of the candidates knew that it was a series circuit. In (c) many candidates thought that the body warmer produced less heat at the front because a smaller current flowed rather than there being less wire.

### Question 3

In (a)(i) candidates had a good knowledge of the order of the parts of the electromagnetic spectrum although in (a)(ii) they were far less sure about which had the greater wavelength or frequency. In (c) uses and hazards of infra-red were often confused with other parts of the spectrum.

### Question 4

In (a) candidates often included refraction as one of the angles. Part (b) was poorly answered with few candidates following the instruction to complete the path of or even continue the wave.

### Question 5

The calculation in (b)(ii) was mostly correct but the rest of the question was poorly answered. In particular, candidates were unable to insert the word 'conserved' which was given in the box.

### Question 6

This question was poorly answered. Candidates often knew one source of background radiation and one use of radioactivity but rarely knew that half-life was a time.

### Question 7

Parts (a) and (b) were very well answered and often one mark out of three was scored in (c).

### Question 8

Candidates had a good knowledge of the different components of a transformer. They were less sure about the difference between the input and output coils often stating that 'the voltage went in through the input' and vice versa. Only 10% of candidates knew where a step-up transformer would be used in a large-scale electricity transmission system.

### Question 9

In (a) some candidates recognised the symbol for the diode although many thought that it represented a variable resistor. In (b) some had difficulty putting into words the difference between a fixed and a variable resistor. In (c) most candidates scored well in (i) and (ii) and in (iii) many calculated 2.2 V from 6.0 - 3.8 although some produced 9.8 V. Disappointingly only about 50 % of candidates scored the mark in (d).

### Question 10

In (a)(i) candidates were able to state the time for the driver to react but considerably fewer were able to calculate the braking time. In (b) many responses did not refer to a time but instead to a speed e.g. 'the driver reacted slower'. In (c) half of the responses would have decreased stopping distance instead of increasing it. In (d) candidates are still reluctant to indicate that the weight of an object acts through its centre of gravity.

### Question 11

In (a)(i) only about 10% of candidates recognised the distance  $c$  as twice the amplitude while about 80% associated  $d$  with wavelength. Approximately 40% were able to do the calculation where curiously the number 30 did not often feature. Just over half the candidates recognised the wave as transverse and gave a simple description of the motion of the ball. In the latter, some stated that it would go up but neglected to say that it would come down again.

### Question 12

Candidates were not always sure about 'chemical' energy in (a)(i) and frequently reversed 'gravitational potential' and 'kinetic' in (b)(ii).

### Question 13

Candidates showed little knowledge of this topic with fewer than 20% able to complete the symbol for carbon-14. However about 75% were able to state that alpha and beta were particles.

### Question 14

This was by far the worst-answered question on the paper. Few could name the device as an electromagnet and in (c)(i) the response to explain how the device works was often 'switch it on'.

### Question 15

By contrast this question was well answered, although many, instead of referring to 'electrons', used the term 'negative charge' which was given in the question.

### Question 16

About 50% of candidates recognised the description in the box as referring to a solid with 'ice' as the only possibility. The processes of melting and evaporation were well known but candidates were largely unable to complete a description of a liquid as having particles in a close-packed irregular structure with random motion.

## PHYSICS 4420, GRADE BOUNDARIES

---

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

	A*	A	B	C	D	E	F	G
Foundation Tier				63	50	37	25	13
Higher Tier	79	67	55	44	33	27		

Option 2: with Coursework (Paper 04)

	A*	A	B	C	D	E	F	G
Foundation Tier				67	53	39	25	11
Higher Tier	81	70	59	48	36	30		

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



Further copies of this publication are available from  
International Regional Offices at [www.edexcel.com/international](http://www.edexcel.com/international)

For more information on Edexcel qualifications, please visit [www.edexcel.com](http://www.edexcel.com)  
Alternatively, you can contact Customer Services at [www.edexcel.com/asktheexpert](http://www.edexcel.com/asktheexpert) or on + 44 1204 770 696

Edexcel Limited. Registered in England and Wales no.4496750  
Registered Office: One90 High Holborn, London, WC1V 7BH