



**General Certificate of Secondary Education**

**Additional Science 4463 /  
Physics 4451**

**PHY2F      Unit Physics 2**

**Report on the Examination**

*2008 examination - January series*

Further copies of this Report are available to download from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

Copyright © 2008 AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

## Physics

### Foundation Tier PHY2F

#### General

There was no evidence that candidates ran out of time. However it did seem that many candidates did not have the use of a calculator. Some candidates clearly did not read questions through thoroughly and gave answers not related to the question, for example: question 4 part (a)(ii) clearly asks about the effect on the fuse yet many candidates answered in terms of the kettle.

#### **Question 1 (Low demand)**

In part (a) many candidates identified at least one elastic object, pleasingly few candidates thought A or D were elastic. However, fewer candidates were able to correctly say why they had made their choice. “Springy”, “stretchy” or a repetition of the question stem being the most popular responses.

(b)(i) and (b)(ii) Less than half of the candidates gave the correct answers.

(b)(iii) The majority of candidates could use the graph to obtain a correct answer.

(b)(iv) Just over half the candidates gave the correct answer.

#### **Question 2 (Low demand)**

(a)(i) Most candidates were able to identify velocity or speed but weight was often given as an incorrect alternative to mass.

(a)(ii) A pleasing number of correct answers given. However a significant number of candidates tried to complete a calculation that involved total mass and a velocity value.

(b)(i) The substitution of values and the subsequent calculation was handled well by the majority of candidates who scored maximum credit.

(b)(ii) Only a minority of candidates understood that the momentum was conserved.

#### **Question 3 (Low demand)**

(a)(i) and (a)(ii) The majority of candidates gave the correct answers.

(b)(i) Most candidates scored at least one mark, with a large proportion of candidates correctly linking the three conditions with the charts.

(b)(ii) There were many correct answers but a significant number of candidates gave an answer which could be interpreted in terms of time rather than distance. Candidates should be encouraged to state the subject of the question first to reduce the possibility of any ambiguity, i.e. ‘The braking distance would be ....’.

**Question 4 (Low demand)**

(a)(i) Nearly all candidates were able to use the information and score full marks.

(a)(ii) The majority of candidates understood that the fuse would melt or 'blow'. However there were a number of answers in terms of "fuse blows up", "explodes" or "doesn't work". A significant number of candidates failed to answer in terms of the fuse but gave answers in terms of the kettle.

(b)(i) The calculation was done well. There were a number of scripts where no attempt was made.

(b)(ii) The missing earth wire was spotted by most candidates. However, the effect of the missing wire was not so well known. Few answers referred to the possibility of the case becoming live and many candidates thought that an electric shock invariably followed from the error.

(c)(i) Most candidates correctly identified L and N.

(c)(ii) There were surprisingly very few correct answers. There were a wide range of incorrect responses – It was sometimes difficult to comprehend how candidates had managed to arrive at such answers.

**Question 5 (Low demand)**

(a) Most candidates scored one mark. However a number of candidates failed to read the question and only ticked one of the boxes.

(b) This question was poorly answered. The most popular response was "buildings" presumably because buildings are man-made. A number of lists were also given – even though the question implies only one correct answer.

(c) There were many correct answers. A common incorrect response was 125 obtained by dividing the total dose by 20.

**Question 6 (Standard demand)**

(a)(i) The ammeter was nearly always correctly positioned. However, the idea of connecting a voltmeter across the material was beyond most candidates. A significant number of candidates used a box for the circuit symbols rather than a circle.

(a)(ii) The most common correct answer was given in terms of adjusting the p.d. A significant number of candidates thought the voltmeter changed the p.d. supplied. Other candidates talked about changing the material or adding another component to the circuit. Thermistors appeared in a few answers (presumably the symbol for a variable resistor being mistaken for a thermistor).

(b)(i) There were very few correct answers. "Line of best fit", "checking for anomalous results" or "more accurate" were common misconceptions.

(b)(ii) Surprisingly few candidates obtained an answer of 36 ohms; 35 or 37 were more popular answers.

(b)(iii) Many candidates were able to calculate the p.d. correctly and gained credit even when their answer to part (b)(ii) was incorrect. However a significant number of candidates used 30 (cm) as the current.

(c)(i) The majority of candidates were able to give the correct relationship between the variables. However there were many answers that involved the length of the putty, which would suggest that these candidates had not read the question properly.

(c)(ii) There were few correct answers given. Many responses were given in terms of errors in the plotting of the graph. Very few answers referred to measurement of current or p.d.

(c)(iii) Many candidates understood the need to repeat measurements although a significant number of candidates thought measuring in mm rather than cm was more reliable.

### **Question 7 (Standard demand)**

This question was not well answered.

(a) Many responses considered charge leaking from the engine or the steering wheel. There was little idea of charging due to friction between the clothes and seat. One common answer was 'Friction between the wheels and the road causes heat which is changed into static'. The Sun also seems to play a big part in the creation of static charge. A small minority of candidates explored the legal meaning of "being charged".

(b)(i) Fair test was the most common incorrect answer. Some candidates considered the effect upon the driver's comfort and safety of the hot and humid conditions.

(b)(ii) This part of question 7 was answered better. Many candidates seemed aware of the limitations of the data.

### **Mark Ranges and Award of Grades**

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.