



General Certificate of Secondary Education

Science B 4462 / Physics 4451

PHY1F Unit Physics 1

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

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.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334). Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General.

Physics

Foundation Tier PHY1F

General

Most candidates appeared to be able to tackle all of the questions. The weaker candidates however were struggling to express themselves clearly when the question involved extended prose.

The standard of handwriting and spelling appears to be declining. Legibility was sometimes a problem, with many candidates not using a blue or black ink pen as instructed on the front of the paper.

Question 1 (*Low Demand*)

- (a) Most candidates were able to match the energy changes to the correct electrical device.
- (b)(i) The majority of candidates correctly stated that the power of kettle Y was 2100 watts. Some however had difficulty in interpreting the scale on the graph and reported the power as 2010 watts. A few candidates reported the power as 2.1 but then forgot to state that the power would then be in kilowatts.
- (b)(ii) Most candidates realised that kettle Y would cost the most to use.
- (b)(iii) Most candidates correctly showed an extra bar on the chart that was higher than for any of the other kettles. A few however, drew a bar that was shorter than the others, perhaps because they confused power with time taken to boil.
- (c) Some candidates were unclear as to the difference between an advantage and a disadvantage. Others did not realise that, when asked for an advantage, what is required is a statement as to why one device is better than the other. Although many candidates were able to give a correct advantage for each device, many others failed to indicate any comparison between the two.

Question 2 (*Low Demand*)

- (a)(i) Very few candidates realised that it was a digital signal that was shown in the diagram. Many thought that they had been asked to name the type of electromagnetic wave.
- (a)(ii) Very few candidates scored both marks, the majority of candidates scored zero. A common misconception is that microwaves can be sent along an optical fibre.
- (b)(i) About half of the candidates were able to obtain the correct answer to the calculation.
- (b)(ii) Most candidates knew that the temperature of the glass will increase
- (c) Although many candidates were able to gain the mark here, some failed to read the rubric correctly. As a consequence, some candidates only ticked one of the boxes instead of two.

- (d) Examiners were pleased to see that the majority of candidates could come up with a correct response to this question.

Question 3 (Low Demand)

- (a) The responses to both parts (i) and (ii) were poor, with many candidates appearing to guess which was the correct line. That gamma rays would be undeflected was better known.
- (b) The majority of candidates were able to score both marks on this part.
- (c) The majority of candidates were able to produce correct responses for parts (i) and (ii). In part (iii) many candidates were unfamiliar with the term half-life and unable to identify the correct answer. Part (iv) was also poorly done.

Question 4 (Low Demand)

- (a) This was answered well by most candidates. However, some candidates were very vague in their use of the term 'pollution' and failed to state whether they were referring to atmospheric pollution or light pollution.
- (b) Only the best candidates could deduce that the new telescope would detect microwaves.
- (c) This was poorly answered. The most common response was 'X-rays can harm people'.

Question 5 (Low Demand)

- (a) Some candidates were not reading the question with sufficient care and thought that the question read "What could a government scientist *do* ..." This interpretation led them to answers such as "Give a slide show" or "Produce a leaflet". Of the candidates who were able to provide *reasons*, most were able to suggest that fossil fuels are running out. Many answers however were vague; examiners frequently saw answers such as "It is bad for the environment"
- (b) Usually well answered, although some candidates used the same letter twice.

Question 6 (Standard Demand)

- (a)(i) Most candidates could name a suitable fuel.
- (a)(ii) Only the better candidates were able to complete the calculation of efficiency correctly. Several stated that they were unable to do so as there was no scale on the Sankey diagram. It would appear that many candidates are still unfamiliar with Sankey diagrams, and do not realise that they need to count the squares across the width of each arrow in order to work out the relative proportions.
- (a)(iii) Very few candidates knew the term fission.
- (b)(i) The majority of candidates did not appear to understand what is meant by the term *efficient* in a scientific context. Many were quoting an 'everyday' sense of the word, such as 'reliable', 'gets the job done' or 'works quickly'.

- (b)(ii)** Although a few of the better candidates knew that the current was decreased, hardly any realised why. Many candidates thought that the cables were covered with an insulating material to prevent heat loss, whilst others thought that the National Grid stored the heat energy and used it to heat people's homes.
- (c)(i)** A minority of candidates correctly stated that the reason was for the purpose of comparison or to act as a control. Most candidates simply stated that it was to make it a fair test.
- (c)(ii)** Again, a common response that gained no marks was 'to make it a fair test'. Others simply repeated the question by stating 'so that they know how many children were studied'.
- (c)(iii)** Most candidates did not score any credit. Weaker candidates, perhaps reading the stimulus passage too quickly, said that the children had developed leukaemia because their parents were unable to control them.
- (c)(iv)** Most candidates opted to tick the second box, and were able to support this choice with a sensible reason. Those candidates who ticked the first box were less successful at providing a satisfactory reason.

Mark ranges and award of grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA website: