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## General Certificate of Secondary Education

# Physics 4451

## PHY3F Unit Physics 3

# Report on the Examination

*2010 examination – June series*

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## Physics
## Foundation Tier PHY3F

### *General*

Questions 1 to 5 were low demand, targeting grades E, F and G. Questions 6 and 7 were standard demand targeting grades C and D.

The majority of candidates attempted all parts of all questions.

This year there were still a number of candidates whose standard of handwriting was so poor as to be almost illegible or whose writing was so small or so faint that it was almost impossible to read. Candidates should be reminded to use a black pen. Many candidates also made poor use of the space provided for the answer. They used only part of the width and then tried to squeeze more information above, below and beside the original space.

It was disappointing how many candidates were unable to recall information, much of which is stated in the specification.

### *Question 1 (Low Demand)*

(a) Over three fifths of candidates answered parts (i) and (iii) correctly but only just over a quarter correctly named the axis of rotation, part (ii), most opting for axis of balance.

(b) (i) Only just under a half of candidates were able to mark the centre of mass of the tyre correctly, most wrongly putting it somewhere on the tyre itself.

(b) (ii) A large majority of candidates gave the correct answer.

### *Question 2 (Low Demand)*

(a) Most candidates were able to identify the correct diagram but under half stated that the microphone transfers the sound wave to the oscilloscope, most candidates opted for the ultrasound transmitter.

(b) Just over three fifths of candidates correctly linked pitch with frequency and loudness with amplitude.

(c) Just under a third of candidates were able to name the correct part of the bell.

(d) (i) Most candidates answered this part correctly.

(d) (ii) Only half of the candidates could give the correct reason to part (d)(i). Many candidates simply rewrote the information given in the question.

### *Question 3 (Low Demand)*

(a) Most candidates knew how speed affects centripetal force.

(b) (i) Just over half of the candidates knew the direction of the force.

(b) (ii) About half of the candidates correctly identified the source of the force although almost as many candidates thought it was provided by gravity.

(b) (iii) About three fifths of candidates knew in which direction the hammer would move should the force be removed, with most of the wrong answers giving the direction as D.

***Question 4 (Low Demand)***

(a) (i) Most candidates knew that iron forms the core of a transformer.

(a) (ii) Nearly two thirds of candidates correctly identified the step-down transformer but a number who gave the wrong answer had changed it from the correct one – possibly after reading the next part of the question which was about a step-up transformer.

(b) Under a third of candidates knew where the step-up transformer fits into the National Grid. This part question was not attempted by a tenth of the candidates.

(c) Most candidates (three quarters) scored four or five marks for this part question. The majority of lost marks were for the last answer where the most common error was to insert the word 'coil' or 'wire'.

***Question 5 (Low Demand)***

(a) (i) & (b) (i) Most candidates tended to get both these answers correct (nearly two thirds), or neither of them. A few candidates gave two contradictory answers to the same part question eg convex mirror and converging.

(a) (ii) Nearly three fifths of candidates correctly named the principal focus.

(a) (iii) Surprisingly only just over half of the candidates identified the process as reflection, the most common fault was to call it refraction.

(b) (ii) Most candidates (three quarters) gained both marks in the calculation, with very few candidates making an arithmetic mistake. Those candidates who did get it wrong had problems in deciding what measurements to make, many measuring from the bottom of the grid.

***Question 6 (Standard Demand)***

Generally all parts of this question were answered well, with many candidates getting almost full marks.

The poorest answers were given to part (a)(i) where candidates were not explicit enough and to part (a)(iv) where some candidates searched desperately to find a non-existent relationship.

(d) Surprisingly nearly two fifths of the candidates were unable to give the correct answer even though the same question has been asked in other recent papers.

***Question 7 (Standard Demand)***

(a) (i) Less than a third of candidates could identify the range of human hearing.

(a) (ii) Only just over half of candidates could recognise the definition of ultrasound.

(b) Many candidates gave 'damage to hearing' as a reason for not using the loudspeaker which was insufficient for the mark; only about two fifths of candidates gave an acceptable reason.

(c) About two fifths of candidates identified the cause of the sound as being a vibration. Many candidates gave vague answers such as machine movement.

(d) (i) This part question was answered well, with just over two fifths of candidates gaining both marks and a further half of candidates achieving one mark.

(d) (ii) Less than a twentieth of candidates managed both marks in this part question although half did manage to gain one mark mainly by discussing the identification of anomalies. Many candidates failed to gain a second mark by not going far enough in their explanation or by simply rewriting the information stated in the question.

**Mark Ranges and Award of Grades**
Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.