GCSE
PHYSICS

PH3HP
Report on the Examination

4403
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General

Questions 1 to 3 were standard demand, targeting grades C and D. Questions 4 and 5 were a mix of standard and high demand. Questions 6 and 7 were high demand, targeting grades A and B.

The paper was accessible to the vast majority of candidates, with very few un-attempted items seen. Most candidates completed the paper within the available time.

The standard of mathematics was good overall, with many candidates coping well with working in standard form. It was pleasing to see that most candidates clearly displayed their working. If a mistake was made in the final calculation, candidates were often able to gain a compensation mark. Many candidates, however, failed to convert quantities into the correct unit before their calculation.

Written responses were varied. The best responses were concise and to the point, without lots of irrelevant information. Too often, however, it appeared that candidates attempted to write down everything they knew about a subject, without fully addressing the question posed. This was evident especially in the QWC question 3a. Candidates should try to ensure their answers are completed in the space available in the question paper. If an extension sheet is used, candidates should clearly indicate that their answer has been continued elsewhere.

Question 1 (Standard Demand)

(a) Just over two-thirds of the higher tier candidates gained both marks for identifying the cornea and retina.

(b) Just less than half the responses gained all 3 marks. The most common mistake was stating that the ciliary muscles changed the size of the lens, rather than the shape of the lens.

(c) The majority of responses gained 1 mark. There were very few candidates who were able to describe how increasing age increased the rate of change in the near point for the second marking point. Candidates should be encouraged to use the headings supplied in tables of data when writing conclusions.

(d) Most responses scored the mark here. Some candidates stated wrongly that the interval needs to be made the same between the ages, and did not realise that the interval was the same (15 years).

(e) Only a minority of candidates gained both marks in this calculation. Three-quarters gained only one mark, this was usually because they failed to convert 40 cm into 0.4 metres.

Question 2 (Standard Demand)

(a) The term “centre of mass” was well generally well known in this question, with most candidates gaining both marks for this question.

(b) Only a quarter of candidates gained full marks for this ray diagram. A further third gained 3 marks, the most common mistake being a failure to put an arrow on any of the rays.

(c) The majority of candidates were able to identify the nature of the image correctly with two descriptions.

Question 3 (Standard Demand)

(a) Almost every candidate attempted this question. A third obtained level 3 (5 or 6 marks). Candidates who failed to score highly often failed to answer the question. Encouragingly many students produced a clear and concise answer, showing excellent communication skills.

(b) That X-rays are ionising was well known by over half of the candidates, failure to gain the second mark was usually due to candidates not writing correctly how the cells would be affected. Just under a fifth of candidates gained no mark at all for this question.

(c) The majority of candidates could name a medical treatment using ultrasound.

Question 4 (Standard & High Demand)

(a) Most candidates knew the answer was incompressible or stated the liquid could not be compressed.

(b) Over two thirds of candidates were confident in re-arranging the equation and using standard form, to obtain the correct answer.

(c) Less than half the candidates correctly answered this question.

Question 5 (Standard & High Demand)

(a) The majority of candidates gained both marks on this question. Common errors were "centrifugal" or "centripedal".

(b) (i) Very few candidates scored all 3 marks, but half of the candidates scored 2. Some mistakenly stated that force changed the speed, rather than understanding that the speed of rotation affected the centripetal force on the astronaut.

(b) (ii) Two thirds of candidates calculated the correct answer.

(c) (i) The majority of responses gained a mark of zero. Use of correct terminology, e.g. the permanent magnetic field interacting with the magnetic field produced by the current, should be stressed to candidates.

(c) (ii) Only a quarter of candidates gained this mark where Fleming's Left Hand Rule had to be applied. Some failed to gain the mark as they drew in how the coil would rotate, rather than the direction of the forces.

(c) (iii) A quarter of candidates gained this mark. There were a lot of incorrect answers showing the misconception that the upwards and downward forces were equal and opposite.

(d) Two thirds of candidates gained this mark. Of the candidates who did not score, many failed to realise that what was required was an immediate change that the operators could make, or were too brief with their answer "increase the supply".

(e) This question tested the societal aspects of scientific evidence. Many coherent answers were produced, with the majority of the responses gaining the mark. At times answers were too brief, "the money would be better spent elsewhere", rather than stating exactly where (e.g. medical care / hospitals). Some answers looked at possible future benefits, rather than the benefits achieved so far.

Question 6 (High Demand)

(a) Less than half of answers gained 2 marks. The most common mistake was failing to convert 60 cm into 0.6 metres.

(b) The majority of candidates failed to gain any marks. Most failed to mention line of action, and simply restated what they were seeing in the diagram.

(c) Less than one third of candidates gained all 3 marks. Many did not give a unit.

Question 7 (High Demand)

(a) A poorly answered question, with almost half the candidates failing to gain any marks. Candidates often failed to state that the magnetic field was changing, or failed to use the word 'induced'.

(b) (i) Most candidates scored both marks. Working was usually clear. Many of the candidates struggled to re-arrange the equation.

(b) (ii) Half of the candidates scored 2 marks. Some candidates gained marks with an error carried forward from their answer to (b)(i).

(c) About one third of the students gained the mark.

(d) Another question testing the societal aspects of scientific evidence. Half of the candidates gained the mark. Many incorrect responses merely repeated information supplied 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.

Converting Marks into UMS marks

Convert raw marks into Uniform Mark Scale (UMS) marks by using the link below.

UMS conversion calculator www.aqa.org.uk/umsconversion