

OXFORD

INTERNATIONAL
AQA EXAMINATIONS

INTERNATIONAL GCSE PHYSICS

9203 Paper 2

Report on the examination

November 2022

REPORT ON EXAMINATION: INTERNATIONAL GCSE PHYSICS 9203/2 NOVEMBER 2022

QUESTION 01

- 01.1** Approximately 75% of students correctly identified the angle of reflection. Of those that didn't, the majority selected the angle measured to the mirror and not the normal.
- 01.2** 80% of students knew that the angle between the normal and the plane mirror was 90° .
- 01.3** 60% of students correctly identified that the resolution of the protractor was 1° .
- 01.4** 95% of students gave the correct angle as 180° .
- 01.5** Approximately 75% of students gave a reasonable conclusion based on the data in the table. Whilst it was expected that students would identify that, within experimental error, the angle of incidence was equal to the angle of reflection, a simple conclusion that as the angle of incidence increased the angle of reflection increased was also given credit.
- 01.6** 65% of students knew that using a greater range of angles of incidence would improve the investigation.
- 01.7** 75% of students knew that the image in the mirror was laterally inverted.

QUESTION 02

- 02.1** 75% of students were able to select the correct components and complete the circuit. Approximately 10% of students chose one correct symbol, or selected them both, but got them the wrong way round.
- 02.2** 85% of students were able to determine the potential difference of the cells in series.
- 02.3** 90% of students performed this simple calculation correctly, achieving both marks.
- 02.4** 90% of students were able to identify the correct graph for a resistor at constant temperature.
- 02.5** 70% of students knew that including a switch would increase the lifetime of the cell.
- 02.6** 75% of students knew that circuit B had the greatest resistance.
- 02.7** Almost 70% of students knew that the current was greatest in circuit C.
- 02.8** This question was well answered with 70% of students scoring three marks. Students tended to get all of the currents correct or didn't score any marks, due to not knowing what happens to current in series and parallel circuits.

QUESTION 03

- 03.1** Almost 80% of students were able to determine the numbers of each of the particles. The majority of the 10% that scored one mark were unable to calculate the number of neutrons.
- 03.2** 65% of students knew what beta radiation is.
- 03.3** A third of students chose 'the proton number increases by one'.
- 03.4** The calculation involving half-life was fairly demanding. A third of students scored full marks. Very few students scored one or two marks as those that knew how to do the calculation tended to arrive at the correct final answer.
- 03.5** 75% of students scored at least one mark on this question, and over half scored two marks. Many students did not achieve full marks because they described a neutron colliding with the nucleus and not being absorbed.

QUESTION 04

- 04.1** Approximately 50% of students scored marks on this question. Many students correctly stated that the oscillations are parallel but, were unable to articulate that they were parallel to the direction of wave travel or the direction of energy transfer.
- 04.2** 40% of students gained marks for explaining how the distance could be calculated. Many students omitted to say that either the distance, or the time, needs to be halved, so their explanation would have resulted in the distance being twice what it actually is.
- 04.3** A third of students knew that the time period was represented by 8 squares on the diagram. 15% were able to score further marks by correctly using the equation, with 5% of students correctly converting the time from microseconds.

QUESTION 05

- 05.1** 40% of students demonstrated some understanding of why electricity is distributed along high-voltage transmission cables. Most of those knew that this reduced energy loss or increased efficiency. 5% of students gave a complete explanation as many did not state that the current decreases.
- 05.2** This was a high demand calculation involving numbers from the figure and a unit conversion. 45% of students scored full marks on this question. 30% scored two marks, either not doing the unit conversion or doing it incorrectly.
- 05.3** Again, this was a high demand calculation involving numbers from the figure and a unit conversion. This was not as well answered, with less than 50% of students scoring any marks. A little over 15% of students did not attempt the question.

QUESTION 06

- 06.1** A little over 5% of students wrote an answer required by the level 3 descriptor in the mark scheme, describing a method that would lead to a valid outcome. Approximately two-thirds of students wrote something creditworthy. Most students attempted the question and were able to suggest some appropriate measurements. Where a student drew a diagram, these tended to be quite good but it was often unclear how the extension would be determined.
- 06.2** Very few students recognised that the data in the table was to more decimal places than could be quoted with a metre rule. Those that did tended to score marks, even if they struggled to articulate their response.
- 06.3** This was very well answered with almost 80% of students scoring full marks. A small number of students used a correct method but were unable to algebraically determine the correct value.
- 06.4** 60% of students scored either four or five marks for plotting the graph. Those that scored four marks either did not draw the line of best fit as a straight line with a ruler, or did not include the units when labelling the axes. The vast majority of students chose a sensible scale and were able to plot the points correctly.
- 06.5** This question was quite well answered with 60% of students scoring two or three marks. Those that scored two marks did not convert the extension. When calculating a gradient, students should use points that are on the line, not points that are given to them in the table.

QUESTION 07

- 07.1** This was a relatively straightforward calculation; students were not fazed by the question asking for the upward force and not the weight. 85% of students arrived at the correct final answer.
- 07.2** This calculation was more demanding but was still well answered. 75% of students got the correct speed. A small number did the correct substitution but then were unable to rearrange the equation.
- 07.3** This was a demanding question. 50% of students were able to write a creditworthy answer, but most struggled to gain more than one mark. Those that did not score any marks made simple statements about energy but, did not identify either kinetic energy or gravitational potential energy. 15% of students wrote excellent answers scoring either three or four marks.
- 07.4** Only 15% of students knew the reason why the orbital velocity of Mars is less than the orbital velocity of Mercury.
- 07.5** Approximately 20% of students scored full marks on this question. There were a variety of different approaches used, and any valid method that correctly showed why the orbital period of Mars is approximately eight times the orbital period of Mercury was given full credit. About 10% of students were able to show that the distance was approximately 4 times greater but were unable to go on from there.

QUESTION 08

- 08.1** 65% of students scored marks on this question. 15% of students were able to explain all the safety features and wrote answers that reached the level 3 descriptor in the mark scheme. More students were able to describe the operation of a fuse than in previous series. Many answers mentioned the earth wire without really explaining what it does. Most students were able to write a simple statement about a circuit breaker. The question produced a wide spread of marks.
- 08.2** 25% of students scored full marks on this question. 40% of students couldn't score any marks as they were unable to use the energy transferred and the time to calculate the power. A little over 10% of the students could not successfully convert the power into watts so scored five marks.

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