Examiners' Report
Principal Examiner Feedback

November 2021

Pearson Edexcel International GCSE
In Physics (Single Award) (4SS0) Paper 1P

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Question 1

These multiple choice questions got increasingly more difficult and this showed in the number of students answering each question correctly.

Question 2

Q2(a)(i) was generally well answered and most students had the idea that it was the change in velocity that needed to be shown. The formula was also correctly quoted in most cases. Where errors occurred, it was usually giving the relationship a =v/t or an incorrect rearrangement. Q2(a)(ii) was also well answered. Most students scoring Q2(a)(i) correctly gained the three marks. Where students did not score full marks, it was generally due to poor rearranging of the correct formula. Most students also scored the mark for the formula in Q2(a)(iii). Where students did not it was as a result of writing the formula as a division rather than a multiplication. Students usually completed the subsequent calculation correctly to gain at least two marks, but many students overlooked the requirement to give their final answer to two significant figures. It is important to always read the full question.

Most students were able to gain at least one mark in Q2(b). Two mark responses were seen less often. Students were able to give the first marking point in their answers, however the reason for the slowing/coming to a stop was not as often given. Students need to understand that questions using the command word “explain” need to have a justification in addition to the initial assertion.

Question 3

Q3(a) was well-answered by most students; typically students scored two or all three marks. Where a mark was lost, it was generally as a result of placing the voltmeter in the wrong place. Nearly all students were aware of the correct symbols for the meters and also where to place the ammeter. Some students placed all meters in parallel and across the connecting wire. These students only scored one mark for the symbols. It was very rare that no marks were scored in this item.

The formula was well known in Q3(b)(i). However, some students did give the letter C for current and a few also divided V and I. Most students scored one of the two marks available in the subsequent calculation in Q3(b)(ii). Most students could substitute into the formula but found the unit conversion beyond them. The conversion from mA to A appeared not to be well understood by students taking this paper. Students that scored no marks did so in most cases as a result of not showing working and substituting into an incorrect formula.

Many students were able to provide the correct answer as shown in the mark scheme. Where students did not score it was generally as a result of taking the term direct current literally and writing about the route. Some students wrote answers that were more in keeping with comparing a.c. to d.c.

It was encouraging to see lots of good correct answers in response to Q3(d). Lots of students demonstrated an excellent understanding to score full marks. However, some correctly stated that the current decreases but were then unable to make a correct link to the idea of resistance increasing. A common misconception was that the current is shared between the two series resistors. Some students stated that the current stays the same, focussing on the idea that current is the same at all points in a series circuit, but not taking the increase in resistance into account.

Question 4

Students usually performed well in the graph plotting exercise in this question with many scoring full marks in Q3(a) and Q3(b). However, marks were sometimes lost for not labelling the axes or omitting units and also for using non-linear scales. Curves of best fit were usually drawn to a high standard. Almost all students scored at least one mark in Q3(c) for a simple description of the relationship between wind speed and wavelength – as one increases so does the other. However, very few students amplified their description correctly to score the second mark. Lots of students referred to the relationship as being directly proportional, which highlighted a misconception surrounding this type of relationship.

It was pleasing to see students using their graph to read information that would help them answer Q3(d). More than half of all students scored a mark for doing this. However, some students did not read the question carefully and gave an incorrect conclusion. For example, despite the wavelength at 29m/s being significantly longer than 350m, some students stated that this would cause the ship to be damaged.

Question 5

Some excellent responses were seen in this question, which demonstrated a clear understanding of the sequence of events involved. Most students were able to score some marks as they addressed a number of the marking points but the sequence of events was incomplete to a greater or lesser degree. Some students confused the motor effect with electromagnetic induction.

Question 6

Whilst many students were able to convey the idea of absolute zero in Q6(a)(ii), answers which were able to give a valid explanation in terms of kinetic energy or pressure of the gas particles were less common. Some students talked about -273 being the maximum or optimum temperature. Q6(b) was challenging and involved lots of different elements to differentiate between students working at different grade boundaries. Most students knew which formula to use but made mistakes in either rearranging the formula or converting from centimetres to metres. A less common mistake was using the side length of the window as the area.

Question 7

Q7(a) was answered to a high standard and nearly all students gave the correct response. Incorrect responses ranged from parts of the EM spectrum to the other types of ionising radiation. A few students did give the correct alternative answer of 'electron(s)'. In Q7(b)(i) many students scored the mark by mentioning the term in the mark scheme. Where students did not score this mark, it was mainly due to using terms such as "to make a fair test" or to test the room radiation or to check the equipment was working properly. Q7(b)(ii) was well answered by most students and the answers from the mark scheme were seen frequently. Where students did not score it was as a result of thinking the dependent variable was the half-life or the time.

Lots of different answers were seen in Q7(c)(i). However, many students had a good idea of the concept of half-life. When 1 mark was awarded it was usually for students who knew it was "time taken" but were less sure about what happened in that time. The most common misconception was stating that mass is halved. Although some of the curves in Q7(c)(ii) were poorly drawn they were sufficient to score both marks. It was pleasing to see so many students apply their understanding of half-life correctly.

Question 8

Students that drew a good straight line generally scored the mark in Q8(a). Common errors were double headed arrows, arrows pointing at right angles to the comet, arrows on the orbit of the comet or on a curved arrow following the path of the orbit.

In Q8(b) some students did not start with a formula (correct or otherwise) and many did not know the formula at all. Powers of 10 also presented problems for some students. The unit was not well known and generally only those who managed the calculation scored that mark.

In Q8(c) most students were able to score two marks for MP1 and MP4. Responses scoring three marks were not common. Many students repeated themselves or gave a contradictory answer when a more concise response would have been sufficient. The best answers scored three marks for including the idea that gravitational field strength decreases as the distance from the centre of the field increases.

Paper Summary

Based on their performance in this examination, students are offered the following advice:

- Attempt all questions even if the student is unsure of their response.
- Take note of the number of marks given for each question and use this as a guide as to the amount of detail expected in the answer.
- Take note of the command word used in each question to determine how the examiner expects the question to be answered, for instance whether to give a description or an explanation.
- Be familiar with the formulae listed in the specification and be able to use them confidently.
- Know the SI units for physical quantities and be able to convert from non-SI units to SI units when required.
- Show all working so that some credit can still be given for answers that are only partly correct.
- Take advantage of opportunities to draw labelled diagrams as well as, or instead of, written answers.
- Be ready to comment on data and suggest improvements to experimental methods.

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