Pearson
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Examiners' Report
Principal Examiner Feedback

October 2018

Pearson Edexcel
International Advanced Subsidiary Level
In Physics (WPH03)
Paper 01 Exploring Physics

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General comment

This paper is designed to test learners' knowledge and understanding pf practical skills. Although the majority of learners showed good knowledge and understanding, there were some weaknesses in understanding some experimental procedures. It is important in the context of practical work that appropriate numbers of significant figures are used in answers. Some answers lost marks because scientific terms were not used correctly or because examiners had difficulty in understanding imprecise and confused explanations. As ever, it is important that learners read the beginning of the questions carefully in order to identify the context.

The mean mark on the paper was 22.5. This was 2.5 marks lower than the mean on the corresponding WPH03 paper last year and the standard deviation was higher.

		Mean	Standard Deviation	A	E
WPH03	1710	25.0	6.0	32	23
	1810	22.5	7.5	31	20

This report should be read together with the published paper and mark scheme available on the Edexcel website.

Section A – Multiple Choice

Questions 1-5

An explanation of the distractors is included in the mark scheme. Although questions all had high percentages of correct responses.

	Subject	Percentage of learners who answered correctly
1	SI system	0.85
2	Reading measuring instrument	0.71
3	Mean, anomalous values and significant figures	0.71
4	Viscosity calculation	0.79
5	Experimental method	0.71

Section B

Q06 - Determination of the acceleration of free fall

Q06(a)

The majority of learners identified the increased time and distance fallen but fewer (30%) went on to identify the significance of the lower percentage uncertainty. A surprising number incorrectly introduced terminal velocity as a factor.

Q06(b)

The mark scheme outlines three possible means of scoring the two marks: all include an assertion and a reason. Only 25% of learners did this, the majority of answers cited two reasons but explained neither.

Q07 - Determination of the Young modulus of a metal in the form of a wire

Q07(a)

Most learners gained 2 marks, however some did not label the diagram or show a secure anchoring method.
A few learners drew a spring rather than a wire: this was not appropriate.

Q07(b)

The majority of learners identified a micrometer as the additional instrument required.

Q07(c)

While the majority of learners answered this correctly, a few forgot the original length was required.

Q07(d)

Quite a few learners gave stress and strain as the variables rather than the measured variables required. A few identified the correct variables but wrongly attributed them to independent and dependent.

Q07(e)

As always nearly all learners gave a correct measuring instrument for a particular measurement but hardly any gave a good justification. Most gave a correct precision but failed to give any idea of the expected measurement.

Q07(f)

Very few learners gained this mark as they gave a very general answer not related to any identified measurement.

Q07(g)

Most learners went used stress strain route. If marks were lost it was because the learners did not give $F = mg$ or the correct calculation for area derived from the measurement of diameter. A few learners did not sketch a graph which was required.

Q07(h)
Very few learners got these marks as they did not recognise the significance of the very small measurements of diameter or extension.

Q07(i)
This was well done, usually mentioning the danger of falling weights and the need for foot protection.

Q08 - Determination of resistivity

Q08(a)
Similar questions have appeared in previous papers and the majority of learners correctly identified two relevant factors.

Q08(b)
The majority of learners had no difficulty with the calculation however 25% did not gain the mark as they generally did not round to the appropriate number of significant figures.

Q08(c)
Learners who correctly compared the resistivity equation to $y = mx + c$ did not always then explain that area and resistivity are constants and that $c = 0$ in order to be awarded the second mark.

Q08(d)(i)
The graph was generally carefully plotted, however the line of best fit was often drawn by joining the origin to the last plotted point rather than balancing the plotted points on each side of the chosen line.

Q08(d)(ii)
There were many excellent answers, however marks were lost by not calculating the radius, not converting mm to m correctly and again using too many significant figures in the final answer.

Q08(e)
Many learners failed to score here because they did not address the context and just mentioned repetition or longer wires. They needed to describe techniques of measurement i.e. switching off to maintain a constant temperature, checking for zero error in specific instruments or making diameter measurements at different positions or orientations.

Summary

This paper provided learners with a wide range of contexts from which their knowledge and understanding of the physics contained within this specification could be tested.

The following are useful ideas for learners.

All diagrams should be drawn with a ruler and labelled clearly.

Familiarity with the SI system and the plotting and use of graphs using scales which are multiple or sub multiples of 1, 2 and 5 should be reinforced.

Learners should make sure they understand the term ‘experimental techniques’.

Answers may be written using bullet points.

Assertions should always be supported with reasons.

In the planning questions it is useful to consider whether a reader could carry out the experiment completely from the instructions given in the answer.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

http://qualifications.pearson.com/en/support/support-topics/results-certification/gradeboundaries.html

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