Pearson

Examiners' Report

Principal Examiner Feedback

January 2018

Pearson Edexcel International Advanced

Subsidiary Level

Physics (WPH03)

Unit 3: Exploring Physics

edexcel

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

January 2018
Publications Code WPH03_01_1801_ER

General Introduction

This paper is designed to test students' knowledge and understanding pf practical skills. Although the majority of students 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 students read the beginning of the questions carefully in order to identify the contexts.

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

Section A – Multiple Choice Questions

Questions 1-5:

An explanation of the distractors is included in the mark scheme.
Although questions 2, 3 and 4 had high percentages of correct responses, it was clear from the response to questions 5 that some students were not so confident with measurement uncertainty.

	Subject	Percentage of students who answered correctly
1	SI system	0.69
2	Measuring instrument	0.78
3	Mean, anomalous values and significant figures	0.73
4	Efficiency calculation	0.95
5	Uncertainty	0.61

Section B

Question 6:

(a) The majority of students identified an appropriate instrument although some thought a metre rule was suitable.

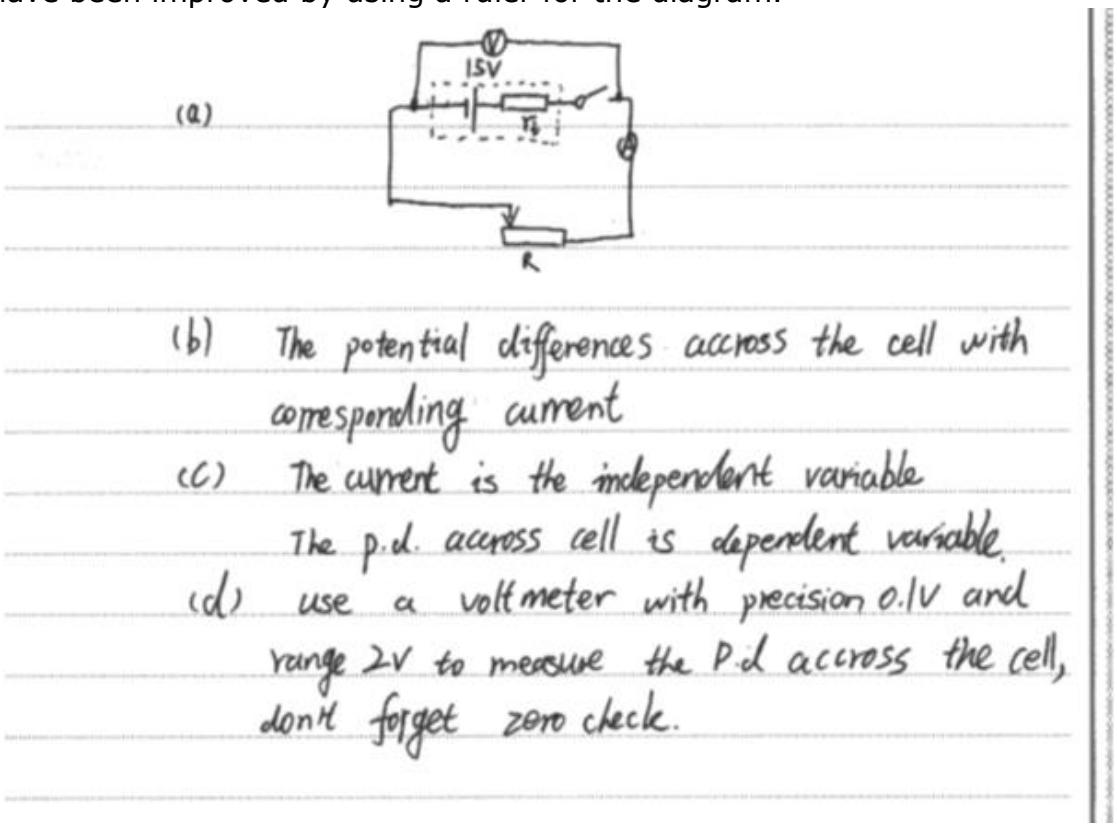
(b) Some students gave too many significant, many of them losing marks for this here and in the previous part. A surprising number of students failed to calculate correctly the volume of a cube, using 3 x side length rather than the side length cubed. Some students also found problems with the powers of ten.

Question 7:

(a) The circuit diagrams were generally well drawn and clearly labelled. Weaker responses showed set ups that didn't include a means of varying the current or did not use correct circuit symbols.

(b & c) The quantities to be measured were usually identified correctly, although current was not always cited as the independent variable.

(d) A voltmeter to measure p.d. was usually given however not all answers explained why a 2 v scale would be appropriate,
An example of a good answer to the parts (a) to (d) is shown below. It would have been improved by using a ruler for the diagram.

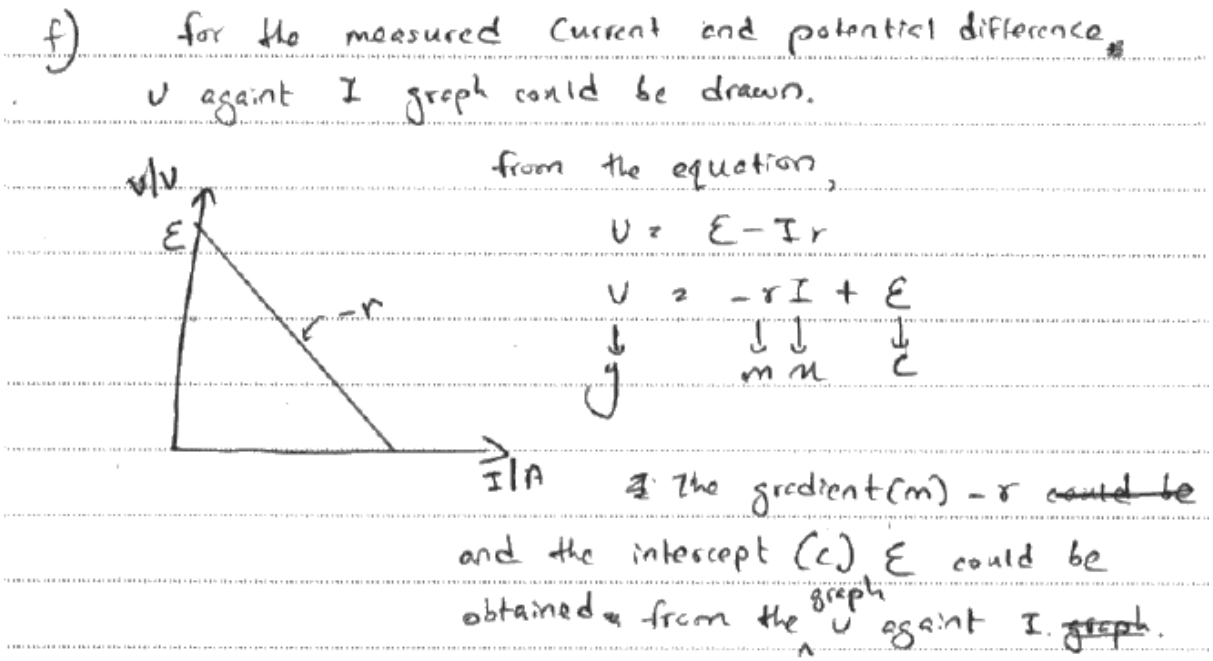


(b) The potential differences accross the cell with corresponding current

(c) The current is the independent variable
The p.d. accross cell is dependent variable.

(d) use a voltmeter with precision 0.1V and range 2V to measure the P.d accross the cell, don't forget zero check.

(f) A good answer with a clearly labelled graph is shown below.



(h) Most students commented sensibly on the low risk associated with a 1.5 V cell. Less satisfactory were answers which suggested that goggles, rubber gloves and boots were required.

Question 8:

(a) Most students were able to make at least one valid point when criticising the results in the table.

(b) A surprising number of students made errors in the calculation.

(c) Although comparisons were made to the equation of a straight line not all answers explained that k was a constant and that $c = 0$.

(d) Graphs were generally drawn very well. Plotting errors often resulted from a poor choice of scale. Scales using multiples or sub-multiples of 1, 2 and 5 should be used.
Many students used a large triangle to find a suitable value for the force constant but not all stated its units.
A value for the energy stored was calculated in most cases although the unit and powers of ten were not always correctly stated.

Summary

This paper provided students 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 students.

- All diagrams should be drawn with a ruler and it is important to use the correct symbols for electrical components.
- 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.
- Students 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.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom