Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICAL SCIENCE **0652/62**

Paper 6 Alternative to Practical **October/November 2018**

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)(i)	**H** is sodium hydroxide ; **J** is zinc sulfate ; only pair giving white ppt. soluble in excess so **H** must be sodium hydroxide as reagent is being added in excess / **J** gives white ppt. with two of the solution (due to zinc ions and sulfate ions) ;	**3**
1(a)(ii)	**L** plus **H** as test-tube gets warmer ;	**1**
1(a)(iii)	sulfate ; (barium nitrate is) **K** ;	**2**
1(b)(i)	apparatus including delivery tube bung in one test-tube and delivery tube into liquid in other test-tube ; tube into labelled limewater ;	**2**
1(b)(ii)	hydrochloric acid ; limewater milky ;	**2**

Question	Answer	Marks
2(a)	5.5 cm ;	**1**
2(b)(ii)	axes labelled with units ; suitable choice of scales ($\geqslant$ half the grid used) ; plots correct to half a small square ;	**3**
2(b)(iii)	good best fit line judgement ;	**1**
2(b)(i)	*Any **one** from the following:* • use of set square / fiducial aid • clamp rule vertically • ruler close to spring • avoidance of parallax explained ;	**1**
2(c)(i)	(5.5 $\pm$ 0.3) (cm) ;	**1**
2(c)(ii)	any difference accounted for by reference to experimental error ;	**1**

Question	Answer	Marks
2(d)	(2.6 ± 0.2) (N) ;	**1**
2(e)	ρ = 3.1 (g / cm^3) ;	**1**

Question	Answer	Marks
3(a)(i)	sodium hydroxide / NaOH ;	**1**
3(a)(ii)	chloride / Cl^- ;	**1**
3(b)(i)	heat / greater acid concentration ;	**1**
3(b)(ii)	moderately reactive / more reactive than copper / less reactive than sodium; discussion of reactions with water or acid as appropriate ;	**2**
3(c)(i)	funnel, filter paper (and collecting vessel) drawn ; filtrate labelled ;	**2**
3(c)(ii)	green ppt.;	**1**
3(d)(i)	Cu^{2+} leaves solution and becomes copper metal ;	**1**
3(d)(ii)	pale green / green / colourless ;	**1**

Question	Answer	Marks
4(a)(i)	voltmeter in parallel with lamp ; ammeter in series with lamp ;	**2**
4(a)(ii)	1.8 (V) ; 0.56 (A) ;	**2**
4(b)	1.008 / 1.01(W) ; 1.0 (W) ;	**2**
4(c)	switch off between readings ; wire gets hot-do not touch ; do not allow sliding contact to touch supply terminal ;	**1**
4(d)	brightness decreases ;	**1**
4(e)	(no) ; $P \times l$ not constant / doubling l does not halve P ;	**1**
4(f)	difficult to find same position on wire each time **or** S has width / cell has run down / wire gets hot so resistance changes ;	**1**

Question	Answer	Marks
5(a)(i)	safety screen / safety glasses **AND** flying glass / keep hands away from tube with magnesium **AND** burns / look away from magnesium burning or view through a filter **AND** can damage eyes ;	**1**
5(a)(ii)	too hot to handle / gives inaccurate mass readings ;	**1**
5(b)(i)	1.33 g ;	**1**
5(b)(ii)	MgO formed / magnesium oxide formed / magnesium reacted with steam ;	**1**
5(b)(iii)	hydrogen / H_2 ;	**1**

Question	Answer	Marks
5(b)(iv)	redox ;	**1**
5(b)(v)	sodium too reactive / sodium would explode ;	**1**
5(c)(i)	number > 7 ;	**1**
5(c)(ii)	acid neutralises the alkali / acid reacts with the alkali / magnesium nitrate formed ; salt formed is soluble / magnesium nitrate is soluble ;	**2**

Question	Answer	Marks
6(a)(i)	difficult to pull magnet and read meter at the same time ; force not constant ; difficult to know when the magnet is about to leave the iron block ;	**1**
6(a)(ii)	repeat the procedure ; enlist the help of a second person ;	**2**
6(b)	3.6 ; N ;	**2**
6(c)	0.8–0.9 (N) ;	**1**
6(d)(i)	greater <u>and</u> magnet is closer to the iron ;	**1**
6(d)(ii)	values of *F* will be larger / more sensitive / larger changes in *F* between readings ;	**1**
6(e)	(same) changes in *F* produce much smaller movements of the pointer ; readings are less accurate / precise / each scale division is now 2 N not 0.1 N ;	**2**