



PHYSICAL SCIENCE

0652/61

Paper 6 Alternative to Practical

October/November 2016

MARK SCHEME

Maximum Mark: 60

Published

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Page 2	Mark Scheme	Syllabus	Paper
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Question	Answers	Marks
1(a)(i)	pestle and mortar ;	1
1(a)(ii)	bubbles will stop ;	1
1(a)(iii)	draw filter funnel and receptacle ; complete piece of filter paper ; filtrate and residue labelled correctly ;	3
1(a)(iv)	heat / boil ; saturate / remove some of water / crystallisation point / partly evaporate ; cool / leave ;	3
1(b)(i)	heat (until white) ;	1
1(b)(ii)	blue ;	1
	Total	10

Question	Answers	Marks
2(a)(i)	add sodium hydroxide (solution) / NaOH ; green ppt ;	2
2(a)(ii)	add dilute nitric acid / HNO ₃ ; then add barium nitrate solution / Ba(NO ₃) ₂ ; white ppt. ;	3
2(b)(i)	hydrogen / H ₂ ;	1
2(b)(ii)	white ppt ; ppt dissolves / becomes colourless solution / soluble in excess ;	2

Page 3	Mark Scheme	Syllabus	Paper
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Question	Answers	Marks
2(c)(i)	displacement / redox / cation reduced / it is reduced / Fe^{2+} goes to Fe / it is replaced by Mg / it is replaced by Mg^{2+} ;	1
2(c)(ii)	exothermic ;	1
	Total	10

Question	Answers	Marks
3(a)(i)	6.5 ;	1
3(a)(ii)	65 ;	1
3(a)(iii)	Appropriate precaution (either written or shown on diagram) ; e.g. take reading at eye level / use of set square to ensure rule vertical / use of fiducial aid	max 1
3(b)	31. <u>0</u> ;	1
3(c)	$T = 1.55$; $T^2 = 2.4$;	2
3(d)	Suitable choice of scales (more than half the grid used) ; At least 4 plots correct to $\frac{1}{2}$ small square ; Good best-fit straight line with a ruler, omission of anomalous point ;	3
3(e)	Yes agree (no mark) (straight) line through the origin No disagree (No mark) all points / anomaly not on the (straight) line	max 1
	Total	10

Page 4	Mark Scheme	Syllabus	Paper
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Question	Answers	Marks
4(a)(i)	variable resistor ;	1
4(a)(ii)	to mix ice and steam ;	1
4(a)(iii)	all water / all liquid / no ice ;	1
4(b)	260 ; $260 \times 5 \times 24 = 31\,200\text{ J}$;	2
4(c)(i)	113 ;	1
4(c)(ii)	(13 g of) condensed / liquefied steam ;	1
4(di)	Any 2 steam condensing / cooling <u>in the tube</u> / on the way to the ice ; not all steam heats the ice ; ice takes in heat from the environment ;	2
4(d)(i)	insulation / lid ;	1
	Total	10

Page 5	Mark Scheme	Syllabus	Paper
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Question	Answers	Marks
5(a)(i)	oxygen / O ₂ ;	1
5(a)(ii)	Hydrogen / H ₂ ;	1
5(b)(i)	litmus OR UI ;	1
5(b)(ii)	gas will not change the colour of red and blue litmus / UI and green or pH 7 ;	1
5(c)	diagram showing the inverted test -tube with the open end under water ; water risen into the test-tube ;	2
5(d)	gas V = ammonia / NH ₃ ; gas W = hydrogen chloride / HCl / sulfur dioxide / SO ₂ ;	2
5(e)	add limewater to test-tube and shake ; (limewater goes) white precipitate / milky ;	2
	Total	10

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answers	Marks
6(a)	A in series with the power source AND V in parallel ;	1
6(b)	0.65 (A) ; 1.5 (V) ;	2
6(c)	wire L = 1.5 ; wire M (= 1.5/0.65 =) 2.3 ; ohms / Ω ;	3
6(d)	minimum of 3 lengths ; minimum 10cm range ; control ONE from material / cross-section / temperature ; graph of resistance against length ;	4
	Total	10