COMBINED SCIENCE **0653/62**

Paper 6 Alternative to Practical **October/November 2016**

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.

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This document consists of **5** printed pages.

Question	Answers	Marks
1(a)	3.1 ; 5.8 ;	2
1(b)	axes labelled with units ; linear scale using at least half the grid ; at least 4 plots correct ± half small square (excluding origin) ; best fit curve ;	4
1(c)(i)	steep <u>and</u> then levels off ;	1
1(c)(ii)	fast at start/slows down;	1
1(d)	glowing splint ; relights ;	2
	Total:	**10**

Question	Answers	Marks
2(a)(i)	copper / Cu ;	1
2(a)(ii)	23.<u>0</u> ; 38.5 ;	2
2(b)(i)	54(.0), 41.5, 30(.0), 15.5 ; ecf	1
2(b)(ii)	vertical scale linear and uses more than half of grid ; minimum of 3 points plotted correctly to within half a small square ; best straight line through origin ;	3

Question	Answers	Marks
2(b)(iii)	agrees as all points close to / on straight line (through origin) ;	1
2(c)(i)	exothermic ;	1
2(c)(ii)	lid / insulation around cup / more accurate thermometer / repeat with different concentrations (extra points) ;	1
	Total:	**10**

Question	Answers	Marks
3(a)	note the reading on either side and find mean / shown on a diagram / measure cube and mark the <u>mid point</u> ;	1
3(b)(i)	36 (.0) ;	1
3(b)(ii)	21 (.0) cm ;	1
3(b)(iii)	14 (.0) cm ;	1
3(c)(i)	84.4 g ;	1
3(c)(ii)	56 to 56.2666… ; 56 / 56.3 g (2 / 3 significant figures) ;	2
3(d)	any 2 centre of gravity of the rule not at the 50 cm mark ; difficulty in obtaining balance of ruler ; pivot not at right angles to edge of rule ; cube irregular ; ruler mass rounded ;	max 2
3(e)	*a* smaller and *b* greater ;	1
	Total:	**10**

Question	Answers	Marks
4(a)(i)	1.8 ;	1
4(a)(ii)	3.5 ;	1
4(b)(i)	1.7 ;	1
4(b)(ii)	8.5 (mm / hr) ;	1
4(b)(iii)	water enters bag / enters membrane ;	1
4(c)	water (in the beaker) ; Benedict's ; heat ; no change / stays blue ;	4
4(d)	level in tube drops / bag deflates / water from bag into beaker ;	1
	Total:	**10**

Question	Answers	Marks
5(a)(i)	ammonia / NH_3 ;	1
5(a)(ii)	white precipitate / white solid ;	1
5(a)(iii)	add silver nitrate ; white precipitate ;	2
5(a)(iv)	blue ppt. ;	1

Question	Answers	Marks
5(b)(i)	measuring cylinder / pipette / burette ;	1
5(b)(ii)	UI ; red to green ;	2
5(b)(iii)	salt would be impure / salt would be coloured ;	1
5(b)(iv)	heat ;	1
	Total:	**10**

Question	Answers	Marks
6(a)	64 (**F**) ; 49 (**G**) ;	2
6(b)	axes labelled with units ; suitable scales chosen for axes using at least half of grid ; at least 4 points plotted ± ½ square for each container ; smooth curves drawn (and labelled) ;	4
6(c)(i)	**G** is better (no mark) because the temperature fell more rapidly / lower curve ;	1
6(c)(ii)	named non-metallic material for **F**, e.g. polythene / wood / plastic ; named metallic material for **G**, e.g. copper / metal ;	2
6(d)	value in region 21 to 40 °C ;	1
	Total:	**10**