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Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/62**

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

MARK SCHEME

Maximum Mark: 60

Published

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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 and 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)	23.0 ; 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**

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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 mid point ;	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

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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

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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

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