



Cambridge IGCSE™

COMBINED SCIENCE

0653/62

Paper 6 Alternative to Practical

May/June 2022

MARK SCHEME

Maximum Mark: 40

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.

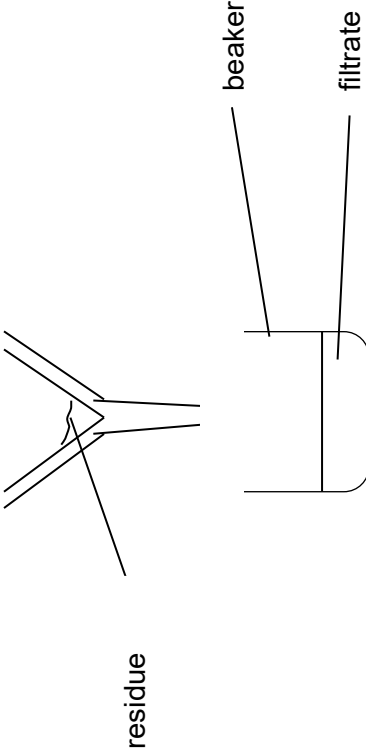
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This document consists of **8** printed pages.

Question	Answer	Marks
1(a)(i)	11.5 ; 13.8 ;	2
1(a)(ii)	0.6 and 2.5	1
1(a)(iii)	higher temperature results in, more mass / weight gain / ORA ;	1
1(a)(iv)	water outside will add to mass / weight / heavier / AW ;	1
1(a)(v)	Benedict's ;	1
1(b)(i)	Outer circle (greater than 6 cm diameter); Continuous line around outside and 9–11 segments ; Pith and centre shown ;	3
1(b)(ii)	75 ;	1
1(b)(iii)	correct measurement ;	1
1(b)(iv)	correct calculation of magnification ;	1
1(b)(v)	starch present in outer skin part / no starch in inner flesh part ;	1

Question	Answer	Marks
2(a)(i)	M and P ;	1
2(a)(ii)	filter paper inside filter funnel ; suitable container collecting filtrate ; residue labelled inside filter paper and filtrate labelled in container ; <i>example of a full mark drawing:</i> 	3
2(a)(iii)	blue precipitate ;	1
2(b)(i)	measuring cylinder ;	1
2(b)(ii)	idea that the speed of the temperature change is less in air / (change in air) slow / slower ;	1
2(c)(i)	x-axis labelled mass in g AND y-axis labelled temperature in °C ; suitable linear scales so that points occupy at least half of the grid in each direction ; plots correct $\pm \frac{1}{2}$ small square ;	3
2(c)(ii)	best-fit curve drawn ;	1

Question	Answer	Marks
2(c)(iii)	as temperature increases the mass increases ;	1
2(c)(iv)	correct mass determined from the graph to within $\pm \frac{1}{2}$ small square ;	1

Question	Answer	Marks
3(a)	(hot water) 61.0 (°C) ; (room temperature) 18.5 (°C) ;	2
3(b)	ensure all mixture at same temperature / AW ;	1
3(c)(i)	($\Delta T_R =$) 9.5 (°C) AND ($\Delta T_H =$) 33 (°C) ;	1
3(c)(ii)	($\Delta E_R =$) 5985 (J) ;	1
3(c)(iii)	($\Delta E_H =$) 6900 (J) ;	1
3(d)	lack of insulation / energy lost (from water to surroundings) ;	1

Question	Answer	Marks
4	<i>One mark from each section and any two others. (one section missing max 6 marks etc.)</i> 1 Apparatus Newton meter / force meter ; metre rule / ruler ; 2 Method attach the Newton meter to the (bar / ring) and pull ; use different distances (from the hinge) ; use minimum of three different distances from pivot / hinge ; care to avoid trapping fingers in hinge so as not to damage fingers / AVP ; 3 Measurements and controls measure distance from pivot / B to place where force is applied / suggests appropriate measurement of distance ; measure size of force when door starts to move ; some attempt to control movement of door so that it is 'just moving' rather than accelerating ; some attempt to ensure force is applied at same angle / direction ; 4 Results table headings force and distance ; correct units ; 5 Results and conclusion look at results for possible anomalies ; repeat and calculate average force for each distance ; plot a graph of force against distance ;	7