



Cambridge IGCSE™

COMBINED SCIENCE**0653/62**

Paper 6 Alternative to Practical

May/June 2023

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.

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 **9** printed pages.

Question	Answer	Marks
1(a)	size – greater than half available space ; quality – continuous smooth outer line with no shading ; detail – five seeds and pentagon shape ;	3
1(b)(i)	diameter of okra 48–52 <u>mm</u> ;	1
1(b)(ii)	irregular shape / not circular / AW ;	1
1(b)(iii)	correct diameter for drawing in mm ;	1
1(b)(iv)	correct calculation of magnification ;	1

Question	Answer	Marks
2	One marking point from each section and any two others (<i>if one section is missing max 6 etc</i>). 1 Apparatus syringe / measuring cylinder and <u>and</u> stop-watch / stop-clock ; thermometer ; water-bath ; 2 Brief description of method and safety precautions mix starch and amylase and start timer (immediately) ; remove samples from mixture at set time intervals and test with iodine ; use different temperatures ; use at least 5 different temperatures ; to stop reaction mixture / iodine / starch / amylase, from entering eye wear goggles / hot apparatus so, do not touch / use tongs / test-tube holder ; 3 Measurements measure time taken when sample, stays brown colour with iodine solution / not blue-black ; detail of measurement of temperature of water-bath, e.g. set thermostat / measure water temperature in beaker ; measure volume / cm³ of amylase or volume / cm³ of starch ; 4 Control variables use same volume / concentration, starch ; use same volume / concentration, amylase ; 5 Process results to draw a conclusion repeat at the same temperature and take averages ; plot graph of time (<u>to break down starch</u>) <u>against temperature (of mixture)</u> ;	7

Question	Answer	Marks
3(a)(i)	touching hot test-tube may cause injury / AW ;	1
3(a)(ii)	18.73 ; 17.85 ;	2
3(a)(iii)	2.50 ;	1
3(a)(iv)	1.62 ;	1
3(a)(v)	gas produced (which escapes) ;	1
3(a)(vi)	35.2 ; answer quoted to two sig. figs. = 35 (%) ;	2
3(a)(vii)	to ensure complete, reaction / decomposition ;	1
3(a)(viii)	blue flame is hotter / reaches a higher temperature ORA / yellow flame causes black (carbon / soot) to form on tube ;	1
3(b)(i)	limewater and goes milky ;	1
3(b)(ii)	carbonate / CO_3^{2-} ;	1
3(b)(iii)	zinc (ticked) ;	1

Question	Answer	Marks
4(a)(i)	$h = 5.9$ (cm) ;	1
4(a)(ii)	$u = 21.3$ (cm) ;	1
4(a)(iii)	$v = 53.7$ (cm) ;	1
4(a)(iv)	1140 ;	1

Question	Answer	Marks
4(a)(v)	cm ² ;	1
4(b)(i)	axes labelled: y-axis: uv / cm^2 and x-axis: D / cm ; suitable linear scale, plotted points fill more than 50% of available space ; points plotted correctly to $\pm \frac{1}{2}$ a small square ;	3
4(b)(ii)	straight line of best fit and reasonable spread of points above and below the line ;	1
4(c)	F in range 14–16 cm ; gradient triangle drawn on graph to cover at least half the length of candidate's line ;	2
4(d)(i)	the straight line is a way of taking an average OR anomalous results can be, seen / identified ;	1
4(d)(ii)	move lens back and forwards (to find sharpest image) ;	1