

Cambridge IGCSE™

COMBINED SCIENCE**0653/63**

Paper 6 Alternative to Practical

May/June 2024

MARK SCHEME

Maximum Mark: 40

Published

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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 **8** printed pages.

Question	Answer	Marks
1(a)(i)	348 ; 353 ;	2
1(a)(ii)	(B =) 14 and (C =) 25 ;	1
1(a)(iii)	change in mass / final mass (of the plant) ;	1
1(a)(iv)	higher concentration (of plant nutrients) results in, faster growth / greater change in mass ;	1
1(b)(i)	to identify / check for / exclude, anomalous results / to check that results are consistent / to check results are, the same / close together / similar ;	1
1(b)(ii)	not growing straight / may fall over / grows side shoots ;	1

Question	Answer	Marks
2	One marking point from each section and any two other marking points: (if one section is missing max 6 etc.). 1 Apparatus stop-watch ; thermostatically controlled water-bath / thermometer ; 2 Method and safety place seeds in apparatus using at least two temperatures ; use at least 5 different temperatures ; (safety) use test-tube holder / tongs, to avoid burns / scalding / soda lime is harmful so wear gloves to protect, hands / skin / stop contact with skin ; 3 Measurements time taken to move fixed distance / distance moved in fixed time ; measure temperature in °C ; 4 Control variables number of seeds ; same distance moved if variable is time / same time if variable is distance ; 5 Processing results idea of repeating at the same temperature and averaging results / repeating at the same temperature to, identify / check for / exclude anomalous results ; calculate rate of respiration by dividing distance moved by drop of liquid by time ; plot rate of respiration / distance moved by drop of liquid, against temperature ;	7

Question	Answer	Marks
3(a)(i)	pencil is insoluble / ink is soluble ;	1
3(a)(ii)	pipette ;	1
3(b)(i)	four / 4 ;	1
3(b)(ii)	idea of not being able to see the spot on the chromatography paper ;	1
3(b)(iii)	3.2 (cm) ;	1
3(b)(iv)	4.4 (cm) ;	1
3(b)(v)	$3.2 \div 4.4 = 0.7272$; 0.73 ;	2
3(c)	(safety precaution) keep away from naked flames / put lid on immediately / use fume cupboard / ventilated area and (explanation) because solvent, is flammable / evaporates easily / volatile / toxic ;	1
3(d)(i)	(test 3 or test 4) gives a green precipitate ;	1
3(d)(ii)	(test 2) gives a white precipitate ;	1
3(d)(iii)	ammonia ;	1
3(d)(iv)	ammonium ;	1

Question	Answer	Marks
4(a)(i)	1.85 ; 2.10 ;	2
4(a)(ii)	read (with eye) perpendicular (to the reading) / wait for ruler / load, to stop moving before taking reading ;	1
4(b)(i)	vertical axis labelled <i>F</i> in N and horizontal axis labelled <i>d</i> in cm ; linear scales so that plotted points occupy at least half the grid ; plots correct to $\pm \frac{1}{2}$ small square ;	3
4(b)(ii)	good judgement best-fit line extended to the vertical axis ;	1
4(b)(iii)	candidate's y intercept value within $\pm \frac{1}{2}$ small square ;	1
4(b)(iv)	two times candidate's 4(b)(iii) answer ;	1
4(b)(v)	$W / 10 ;$ $\times 1000 =$ answer in range 100 g–200 g ;	2
4(c)	line of best fit reduces effect of, random errors / anomalous results ;	1
4(d)	(top pan) balance ;	1