



Cambridge IGCSE™

COMBINED SCIENCE

0653/61

Paper 6 Alternative to Practical

May/June 2020

MARK SCHEME

Maximum Mark: 40

Published

Students did not sit exam papers in the June 2020 series due to the Covid-19 global pandemic.

This mark scheme is published to support teachers and students and should be read together with the question paper. It shows the requirements of the exam. The answer column of the mark scheme shows the proposed basis on which Examiners would award marks for this exam. Where appropriate, this column also provides the most likely acceptable alternative responses expected from students. Examiners usually review the mark scheme after they have seen student responses and update the mark scheme if appropriate. In the June series, Examiners were unable to consider the acceptability of alternative responses, as there were no student responses to consider.

Mark schemes should usually be read together with the Principal Examiner Report for Teachers. However, because students did not sit exam papers, there is no Principal Examiner Report for Teachers for the June 2020 series.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the June 2020 series for most Cambridge IGCSE™ and Cambridge International A & AS Level components, and some Cambridge O Level components.

This document consists of 7 printed pages.

Question	Answer	Marks
1(a)	8 / 9 ;	1
1(b)(i)	(surface area) cube B = 600 AND cube C = 150 ;	1
1(b)(ii)	(volume) cube B = 1000 AND cube C = 125 ;	1
1(c)(i)	(cube B) 145 ; (cube C) 47 ;	2
1(c)(ii)	time (to change colour to red) AND / s ;	1
1(c)(iii)	increase in surface area to volume ratio takes less time to change / ORA ;	1
1(c)(iv)	acid diffuses in ; pH changes to acidic ;	2
1(c)(v)	cutting AND use knife, on solid surface / away from body ; OR acid / indicator AND use, gloves / goggles ;	1
1(d)(i)	suitable scale chosen ; all points plotted correctly ;	2
1(d)(ii)	suitable curve of best fit ;	1

Question	Answer	Marks
2(a)(i)	(volumetric) pipette ;	1
2(a)(ii)	(experiment 2) 5.9 ; (experiment 3) 5.3 ;	2

Question	Answer	Marks
2(a)(iii)	(volumes) 5.3 and 5.1 AND (explanation) the others were not neutral / go orange at the end point / others had too much acid added ;	1
2(a)(iv)	5.2 / correct average calculated from their chosen volumes ;	1
2(a)(v)	average calculated in (a)(iv) $\times$ 3 ;	1
2(a)(vi)	neutralisation / acid-base ;	1
2(b)(i)	(more concentrated solution) hydrochloric acid AND less used than sodium hydroxide ;	1
2(b)(ii)	(25 / 5.2 =) 5 / 4.8 ;	1
2(c)(i)	chloride / Cl^- ;	1
2(c)(ii)	sodium chloride ;	1
2(c)(iii)	tripod and Bunsen burner and evaporating basin (and gauze) ; two correct labels ;	2

Question	Answer	Marks
3(a)(i)	line emerging at 90° to the straight edge and labelled X ;	1
3(a)(ii)	52° ; ; (if answer is incorrect allow one mark for answer in range of $49-55^\circ$)	2
3(b)	<i>any one from:</i> repeat AND average ; use a dark room / low light level / use a bright light source ; narrow beam of light / use of thin slit ; avoid parallax error when taking measurements ;	1

Question	Answer	Marks
3(c)	no AND reference to a pair of values from Table 3.1 ;	1
3(d)	(estimate of critical angle =) answer greater than 40° and less than or equal to 50° ;	1
3(e)	measure angle of refraction for angles of incidence in between 40° and 50° / carefully move the light source around the curve back and forth to find the smallest angle of incidence where no light is refracted and measure this angle of incidence ;	1

Question	Answer	Marks
4	one <i>marking point</i> from each section and any <u>three others</u>: method and apparatus fill tank with water to a specified depth (< 20 cm) ; use of stopwatch / suitable timing device ; repeat and take average <u>for each depth</u> ; variables keep method of producing waves the same ; same water source / same environment ; minimum of four values of depth of water given ; values of depth have a range of at least 15 cm AND do not exceed 20 cm maximum depth ; results time for the waves to travel length of tank AND depth of water ; conclusion calculation of speed of waves from the time measurements ; use results to plot graph of depth against speed ; look for pattern in the change of speed as depth increases ;	7