Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/63**

Paper 6 Alternative to Practical **October/November 2017**

MARK SCHEME

Maximum Mark: 60

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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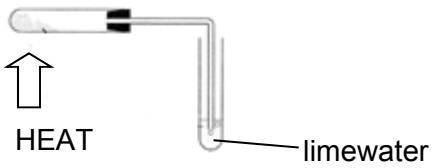
Question	Answer	Marks
1(a)(i)	Axes correctly labelled: surface area **and** cm^2 **and** distance / d **and** cm ; Suitable linear scale using at least half the grid ; All 4 points plotted correctly ± half small square ; Best fit straight line through origin ;	**4**
1(a)(ii)	More enzyme, faster reaction ORA ;	**1**
1(a)(iii)	Correct reading from graph ; Lines on graph to show working ;	**2**
1(b)	Any **two** from temperature ; pH ; pieces from same potato ; concentration of peroxide ;	**2**
1(c)	Glowing splint **and** relights ;	**1**

Question	Answer	Marks
2(a)(i)	 apparatus ; **H or** limewater label **and** 'HEAT' ;	**2**
2(a)(ii)	to prevent suckback / to stop cold liquid hitting hot solid / to prevent glassware cracking ;	**1**
2(a)(iii)	carbon dioxide (gas) ;	**1**
2(a)(iv)	**H** is a carbonate ;	**1**
2(a)(v)	zinc carbonate / $ZnCO_3$;	**1**
2(b)(i)	white ;	**1**
2(b)(ii)	(white) ppt ;	**1**
2(c)(i)	(test / reagent) – (observation) barium nitrate solution – no reaction silver nitrate solution – yellow ppt. ;	**1**
2(c)(ii)	iod**ide** / I^- / not sulfate / not SO_4^{2-} / not chloride / not Cl^- / not bromide / not Br^- ;	**1**

Question	Answer	Marks
3(a)(i)	59.8 (cm) ;	**1**
3(a)(ii)	29.8 (cm) ;	**1**
3(a)(iii)	1.0 **and** 1.7 ;	**1**
3(a)(iv)	2.0 **and** 2.7 ;	**1**
3(b)(i)	plots correct to half a small square, at least 4 correct ; good best fit line judgement ;	**2**
3(b)(ii)	indication on graph of how data obtained AND at least half of line used ; correct calculation for triangle method using data from graph ;	**2**
3(b)(iii)	(15.0 ± 1.0) 2 / 3 s.f. only ;	**1**
3(c)	any **one** from move screen slowly to / fro until sharpest focus obtained ; object / lens / screen perpendicular to bench ; object and lens same height above the bench ; carry out experiment away from other bright light sources / darkened room ;	**1**

Question	Answer	Marks
4(a)	(Placed in a suitable dish with) water ; (Kept in a) warm (place) / suitable temperature ;	**2**
4(b)	shorter shoot in **A** ; taller shoot in **C** ;	**2**
4(c)	Heat ; Benedicts solution ; Yellow / green / orange / red ;	**3**
4(d)	Lighting from one side ; Control – even light / in the dark ; More than one seedling (in each condition) ;	**3**

Question	Answer	Marks
5(a)(i)	alkali / hydroxide ion / OH^- ;	**1**
5(a)(ii)	green **and** ppt. ;	**1**
5(a)(iii)	aqueous Fe^{3+} / dissolve / react with acid ; add (excess) sodium hydroxide solution / ammonia solution ; red-brown and ppt. ;	**3**
5(b)(i)	oil on top label ; boiled water label ;	**2**
5(b)(ii)	all nails made of iron / steel ;	**1**
5(c)	need to show that water alone does not cause rusting as in **L** ; need to show that air alone does not cause rusting as in **J** ;	**2**

Question	Answer	Marks
6(a)(i)	4.2 ; 13.0 ;	**2**
6(a)(ii)	1,4,6,8 ; all use brick / same block ; all have different surfaces / all surfaces ;	**3**
6(a)(iii)	sand carpet wood glass ;	**1**
6(b)	difficult to judge the first pull / accuracy / minimise errors / lessens effects of anomalies AVP ;	**1**
6(c)	would be difficult to stop / slip / slide etc. ;	**1**
6(d)	sand / gravel / very rough tarmac ; high resistance to movement / would slow / stop car quickest / big(gest) resisting force / large(st) friction ;	**2**