CO-ORDINATED SCIENCES **0654/61**

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

MARK SCHEME

Maximum Mark: 60

Published

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This document consists of **7** printed pages.

Question	Answer	Marks
1(a)	Syringe / burette ;	**1**
1(b)	3 **and** 2 ;	**1**
1(c)	Axes labelled time **and** s (on y) concentration **and** % (on x) ; Suitable linear scale using at least half the grid ; all 4 points plotted correctly ± half small square ; Best fit line ;	**4**
1(d)	Decreasing <u>concentration</u> increases <u>time</u> ORA ;	**1**
1(e)(i)	All temps below 100 ; At least 3 below 50 must be above 0 ;	**2**
1(e)(ii)	**two** from: Volume of milk Same type of milk pH concentration of enzyme volume of enzyme volume of water	**1**

Question	Answer	Marks
2(a)(i)	T_1 21.5 ; T_2 34.<u>0</u> ;	**2**
2(a)(ii)	(+) 12.5 ;	**1**
2(a)(iii)	exothermic ;	**1**
2(b)(i)	alkaline ;	**1**
2(b)(ii)	limewater / calcium hydroxide / $Ca(OH)_2$;	**1**
2(b)(iii)	sodium hydroxide ;	**1**
2(c)	**(H** is) calcium (oxide) ; **H** + water gives limewater for CO_2 test / calcium oxide reacts exothermically with water / **F** must be calcium hydroxide / **F** is limewater ;	**2**
2(d)	chloride / Cl^- ;	**1**

Question	Answer	Marks
3(a)	1.4 ; 0.32 ;	**2**
3(b)(i)	to prevent wire getting hot / resistance of wire changing / cell running down ;	**1**
3(b)(ii)	ammeter shows a reading ;	**1**
3(c)(i)	W / watt(s) ;	**1**
3(c)(ii)	0.23 **and** 0.17; 2 decimal places ;	**2**
3(d)(i)	a straight line with a positive gradient ; through the origin ;	**2**
3(d)(ii)	(actual values used to show that (for example)), doubling I does not double P ;	**1**

Question	Answer	Marks
4(a)	Root hair ;	**1**
4(b)(i)	Quality drawing using at least half the box ; Nucleus correctly labelled ; Cell wall correctly labelled ;	**3**
4(b)(ii)	34 $\pm$ 1 ;	**1**
4(b)(iii)	Measurement to nearest mm ;	**1**
4(b)(iv)	Magnification correctly calculated ;	**1**
4(c)	Starch present ;	**1**
4(d)	select <u>anther</u> ; use a microscope to observe ;	**2**

Question	Answer	Marks
5(a)(i)	6.96 ; 6.85 ;	**2**
5(a)(ii)	0.49 and 0.49 ; + and – ;	**2**
5(b)	any **two** from: stays as blue ; mass changes are the same at the electrodes ; anode dissolves / copper ions from anode go into solution ;	**2**
5(c)(i)	(iron and copper) because copper dissolves from the anode / positive / plates on the cathode / negative ;	**1**
5(c)(ii)	copper sulfate (solution) ;	**1**
5(c)(iii)	smaller pink / orange / copper coloured blue / unchanged ;; all 3 correct = 2 marks; 1 or 2 correct = 1 mark	**2**

Question	Answer	Marks
6(a)(i)	correct position marked ;	1
6(a)(ii)	0.87 ;	1
6(a)(iii)	data to 2 sf / <u>large</u> variation in raw data ;	1
6(b)(i)	0.76, 0.98, 1.21 correct answers only ;	1
6(b)(ii)	plots correct to half a small square – at least 4 correct ; good best fit line judgement ;	2
6(b)(iii)	indication <u>on graph</u> of how data obtained AND at least half of line used ; correct calculation for triangle method using data from graph ;	2
6(c)(i)	correct answer from candidate's gradient value ;	1
6(c)(ii)	reduces percentage error in the time / reduces the <u>effect</u> of (human) reaction error ;	1