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**CO-ORDINATED SCIENCES**

**0654/52**

Paper 5 Practical Test

**October/November 2017**

MARK SCHEME

Maximum Mark: 45

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**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.

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This document consists of **4** printed pages.

Question	Answer	Marks								
1(a)	quality of drawing using at least half the box ; root correctly labelled ; stem correctly labelled ;	<b>3</b>								
1(b)(i)	correct measurement in mm ;	<b>1</b>								
1(b)(ii)	correct measurement (in mm) ;	<b>1</b>								
1(b)(iii)	magnification correctly calculated ;	<b>1</b>								
1(c)	placed in a suitable container with water ;  kept in a warm place ;	<b>2</b>								
1(d)(i)	Benedict's ;	<b>1</b>								
1(d)(ii)	<table border="1" data-bbox="322 746 1229 882"> <tr> <td></td> <td>Benedict's test</td> <td>biuret test</td> <td>iodine test</td> </tr> <tr> <td>nutrient tested for</td> <td><b>Reducing sugar</b></td> <td><b>protein</b></td> <td><b>starch</b></td> </tr> </table> <p>observations correct;</p>		Benedict's test	biuret test	iodine test	nutrient tested for	<b>Reducing sugar</b>	<b>protein</b>	<b>starch</b>	<b>1</b>
	Benedict's test	biuret test	iodine test							
nutrient tested for	<b>Reducing sugar</b>	<b>protein</b>	<b>starch</b>							
1(d)(iii)	<table border="1" data-bbox="322 986 1229 1121"> <tr> <td>Benedict's</td> <td>biuret</td> <td>iodine</td> </tr> <tr> <td><b>yellow / green / orange / red ;</b></td> <td><b>purple ;</b></td> <td><b>blue-black ;</b></td> </tr> </table>	Benedict's	biuret	iodine	<b>yellow / green / orange / red ;</b>	<b>purple ;</b>	<b>blue-black ;</b>	<b>3</b>		
Benedict's	biuret	iodine								
<b>yellow / green / orange / red ;</b>	<b>purple ;</b>	<b>blue-black ;</b>								
1(d)(iv)	reducing sugar, protein and starch all three = 2 marks one or two named = 1 mark	<b>2</b>								

Question	Answer	Marks										
2(a)(i)	neat table with appropriate headings ; <table border="1" data-bbox="322 284 1229 539"> <thead> <tr> <th data-bbox="322 284 779 331">solution</th> <th data-bbox="779 284 1229 331">observation</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 331 779 384">ammonium sulfate</td> <td data-bbox="779 331 1229 384">no reaction / no ppt. ;</td> </tr> <tr> <td data-bbox="322 384 779 437">copper sulfate</td> <td data-bbox="779 384 1229 437">blue ppt ;</td> </tr> <tr> <td data-bbox="322 437 779 489">iron(III) sulfate</td> <td data-bbox="779 437 1229 489">brown / orange ppt ;</td> </tr> <tr> <td data-bbox="322 489 779 539">zinc sulfate</td> <td data-bbox="779 489 1229 539">white ppt ;</td> </tr> </tbody> </table>	solution	observation	ammonium sulfate	no reaction / no ppt. ;	copper sulfate	blue ppt ;	iron(III) sulfate	brown / orange ppt ;	zinc sulfate	white ppt ;	<b>5</b>
solution	observation											
ammonium sulfate	no reaction / no ppt. ;											
copper sulfate	blue ppt ;											
iron(III) sulfate	brown / orange ppt ;											
zinc sulfate	white ppt ;											
2(a)(ii)	(damp) red litmus <b>and</b> goes blue ;	<b>1</b>										
2(b)(i)	different coloured ppts. / different results ; same coloured ppts. as NaOH or ammonia ; ammonia from ammonium (as with NaOH) / no ammonia from ammonium (unlike NaOH) ;	<b>3</b>										
2(b)(ii)	add <b>H</b> to iron(II) sulfate ;	<b>1</b>										
2(c)(i)	limewater turns milky ;	<b>1</b>										
2(c)(ii)	carbon dioxide produced / <b>2(c)(i)</b> is the test for a carbonate / sodium sulfate would not give a gas ; <b>H</b> is sodium carbonate ;	<b>2</b>										
2(c)(iii)	barium carbonate	<b>1</b>										
2(c)(iv)	should have added dilute nitric acid or dilute hydrochloric acid before adding the barium nitrate ;	<b>1</b>										

Question	Answer	Marks
3(a)(i)	$\theta$ recorded at $t = 0$ for $200 \text{ cm}^3$ ;	1
3(a)(ii)	for $200 \text{ cm}^3$ : $t$ values correct ; all values of temperature recorded ; $\theta$ values decreasing ;	3
3(b)	larger change over 180 s for $100 \text{ cm}^3$ beaker ;	1
3(c)	to allow maximum temperature of hot water to be recorded / write ;	1
3(d)	axes labelled with units ; suitable choice of scales ( $\geq$ half the grid used) ; at least 5 plots correct to half a small square (penalise 'blobs') ; good best-fit curve judgement ;	4
3(e)	gradient greater / graph steeper at start of experiment	1
3(f)	statement matching temperature changes <b>and</b> justification referring to results ; justification referring to temperature changes <u>in the same time</u> ;	2
3(g)	any two from: room temperature / <u>initial</u> water temperature / same volume(s) of water / keep thermometer the same depth ;;	2