

5.5.3 Chemistry Practical Paper 3 (233/3)

(a)	Temperature of final mixture 22.5 °C	(1 mark)																		
(b)	<p>Table 1</p> <table border="1"> <thead> <tr> <th>Experiment</th> <th>Time (seconds)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>14.1</td> </tr> <tr> <td>2</td> <td>22.0</td> </tr> <tr> <td>3</td> <td>32.0</td> </tr> <tr> <td>4</td> <td>49.0</td> </tr> <tr> <td>5</td> <td>78.2</td> </tr> </tbody> </table> <p>Complete table.....1½ marks Decimal.....½ mark Accuracy.....½ mark Trend.....½ mark</p>	Experiment	Time (seconds)	1	14.1	2	22.0	3	32.0	4	49.0	5	78.2	(3 marks)						
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(c)	<p>Table 2</p> <table border="1"> <thead> <tr> <th>Experiment</th> <th>B²</th> <th>Rate = $\frac{1000}{\text{time}} \text{ s}^{-1}$</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>64</td> <td>70.9</td> </tr> <tr> <td>2</td> <td>36</td> <td>45.5</td> </tr> <tr> <td>3</td> <td>25</td> <td>31.3</td> </tr> <tr> <td>4</td> <td>16</td> <td>20.4</td> </tr> <tr> <td>5</td> <td>9</td> <td>12.8</td> </tr> </tbody> </table> <p>Note: All points lie on a straight line except for B = 8, B² = 64, rate = 70.9 s⁻¹</p> <ul style="list-style-type: none"> - Correctly worked B².....½ for each value to a maximum of 2½ marks - Correctly worked rate.....½ for each value to a maximum of 2½ marks 	Experiment	B ²	Rate = $\frac{1000}{\text{time}} \text{ s}^{-1}$	1	64	70.9	2	36	45.5	3	25	31.3	4	16	20.4	5	9	12.8	(5 marks)
Experiment	B ²	Rate = $\frac{1000}{\text{time}} \text{ s}^{-1}$																		
1	64	70.9																		
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(d)		
	Scale - $\frac{1}{2}$ Labelled Axes - $\frac{1}{2}$ Line - 1 Plots - 1	(3 marks)
(e)	e) $B = 7, B^2 = 49$ From the graph, $\text{Rate} = \frac{1000}{\text{time}} = 62$ $\therefore \text{Time} = \frac{1000}{62} = 16.1 \text{ s}$	($\frac{1}{2}$ Mark) (1 mark) ($\frac{1}{2}$ Mark)
(f)	Keep volume of solution B and solution C constant. Use different volumes of solution A. Calculate appropriate volume of distilled water to use to make total volume constant.	(2 marks)

2 a)	Observations	Inferences
	-red litmus paper turns blue - white fumes which form a white solid on the sides of the test tube. OR the white solid sublimes. (1 mark)	- an ammonium salt OR basic gas OR NH_4^+ ions present. (1 mark)
b) (i)	Observations	Inferences
	No white precipitate (1 mark)	$\text{Zn}^{2+} / \text{Pb}^{2+} / \text{Al}^{3+} / \text{Mg}^{2+} /$ Ca^{2+} ions absent (½ each, Maximum 2 marks)
(ii)	Observations	Inferences
	No white precipitate (1 mark)	$\text{SO}_4^{2-} / \text{SO}_3^{2-} / \text{CO}_3^{2-}$ ions absent (1 mark for all three ½ mark for two)
(iii)	Observations	Inferences
	White precipitate (½ mark), which dissolves on warming (½ mark) (1 mark)	Cl^- or Br^- ions present (1 mark)
(iv)	Observations	Inferences
	Colourless solution turns yellow (1 mark) Yellow colour persists OR no blue colour with starch. (1 mark) (2 marks)	Br^- ions present I^- ions absent (1 mark)
2(c) i	Cation : NH_4^+	(½ mark)
ii	Anion : Br^-	(½ mark)

3 a)	Observations	Inferences
	Burns with a yellow luminous flame (1 mark)	Long chain hydrocarbon OR unsaturated compound (1 mark)
(b)	Observations	Inferences
	Two layers formed (1 mark) OR Q not soluble/immiscible in water. (1 mark)	Non - polar compound (1 mark)
(c)	Observations	Inferences
	No effervescence (1 mark)	Q is not acidic (1 Mark) OR Absence of carboxylic acid OR $\text{RCOOH}/\text{H}^+ / \text{H}_3\text{O}^+$ absent. (1 mark)
(d)	Observations	Inferences
	Bromine water not decolourised (1 mark)	Alkene/alkyne absent (1 mark) $\text{>C=C<} / \text{-C}\equiv\text{C-}$ absent (1 mark)
(e)	Observations	Inferences
	Orange colour persists OR No green colour formed (1 mark)	Alcohol absent OR R-OH absent (1 mark)

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