

Question		Answer	Marks	AO element	Guidance
4	(a)	<p>At 90 °C/higher temperature</p> <ul style="list-style-type: none"> Faster rate AND more frequent collisions ✓ More particles have the activation energy/E_a or greater ✓ $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ is lower ✓ (forward reaction) ΔH –ve OR exothermic ✓ 	4	AO2.7 ×1 AO1.2 ×1 AO2.3 ×1 AO1.2 ×1	<p>ORA for 50 °C</p> <p>IGNORE more successful collisions</p> <p>ALLOW more molecules have enough energy to react</p> <p>ALLOW atoms/molecules/ions</p> <p>ALLOW decreases</p>
	(b)	(i)			
		<p>Cl^- /It/They react with AgNO_3 / Ag^+ /silver ions</p> <p>OR</p> <p>AgCl formed</p> <p>OR</p> <p>$\text{Ag}^+ + \text{Cl}^- \rightarrow \text{AgCl}$ ✓</p>	1	AO3.2	<p>IGNORE chlorine/Cl for chloride ion</p> <p>IGNORE AgCl_2</p>

Question		Answer	Marks	AO element	Guidance
	(ii)	<p>$[\text{CoCl}_4^{2-}]$ decreases AND $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ increases ✓</p> <p>C_l^- increase is $4 \times$ change in $[\text{CoCl}_4^{2-}] / [\text{Co}(\text{H}_2\text{O})_6]^{2+}$ ✓</p> <p>Equilibrium shifts to right ✓</p>	3	<p>AO3.1 $\times 2$</p> <p>AO3.2 $\times 1$</p>	<p>IGNORE missing charges and small slips in formulae, e.g. CoCl_4 missing bracket, etc</p> <p>IGNORE C_l^- for changes in concentration</p> <p>ALLOW suitable alternatives for 'shifts to right', e.g. towards products OR in forward direction OR 'favours the right'</p>