

- 2-Propanol can be oxidised to acetone using $\text{Cr}_2\text{O}_7^{2-}$ in acidic solution as indicated in the reaction below. The rate of decrease of the $\text{Cr}_2\text{O}_7^{2-}$ ion under a certain set of conditions is $3.0 \text{ mol L}^{-1} \text{ s}^{-1}$.



What is the rate of increase in the concentration of Cr^{3+} ?

6.0 mol L⁻¹ s⁻¹

What is the rate of decrease in the concentration of 2-propanol?

9.0 mol L⁻¹ s⁻¹

The rate law for this reaction is: $\text{Rate} = k [\text{Cr}_2\text{O}_7^{2-}][\text{CH}_3\text{CH}(\text{OH})\text{CH}_3][\text{H}^+]^2$

Complete the following table by writing *increase*, *decrease* or *no change* in the box to indicate how the rate of the reaction is affected by each of the following changes.

Increase in $[\text{CH}_3\text{CH}(\text{OH})\text{CH}_3]$	increase
Increase in $[\text{CH}_3\text{COCH}_3]$	no change
Increase in pH	decrease
Increase in temperature	increase

- Complete the following table.

Formula	Systematic name	Oxidation state of transition metal	Number of <i>d</i> -electrons
$\text{K}_2[\text{Pt}(\text{CN})_4]$	potassium tetracyanidoplatinate(II)	+2	8
$[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_2$	hexaaquacobalt(II) chloride	+2	7

Marks
4

4