

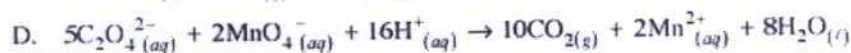
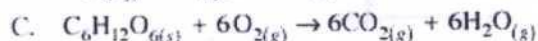
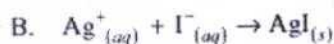
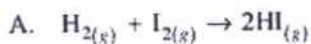
5. Given the reaction: $2\text{Al}_{(s)} + 6\text{HCl}_{(aq)} \rightarrow 3\text{H}_{2(g)} + 2\text{AlCl}_{3(aq)}$
If the rate of production of H_2 is 5.50 L/min, calculate the rate of consumption of Al in g/min. (3 marks)

$$5.50 \frac{\text{L H}_2}{\text{min}} \times \frac{1 \text{ mol H}_2}{22.4 \text{ L H}_2} \times \frac{2 \text{ mol Al}}{3 \text{ mol H}_2} \times \frac{27.0 \text{ g Al}}{1 \text{ mol Al}} = 4.42 \text{ g Al/min}$$

3

Answer 4.42 g Al/min

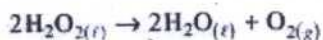
6. At 25°C, which of the following reactions is fastest (1 mark)

Answer B

- Give an explanation for your answer. (1 mark)

Both reactants (aq.) ← close proximity & highly mobile
~~fast~~ & no bonds to break

7. Consider the following reaction:



- If the rate of consumption of H_2O_2 is 0.020 g/s, calculate the rate of production of O_2 in mol/min. (3 marks)

$$0.020 \frac{\text{g H}_2\text{O}_2}{\text{s}} \times \frac{1 \text{ mol H}_2\text{O}_2}{34.0 \text{ g H}_2\text{O}_2} \times \frac{1 \text{ mol O}_2}{2 \text{ mol H}_2\text{O}_2} \times \frac{60 \text{ s}}{1 \text{ min}} = 0.018 \text{ mol O}_2/\text{min}$$

(1.8 $\cdot 10^{-2}$ mol/min)
0.018 mol/min

Answer 0.018 mol/min

8. Given the reaction: $\text{CO}_{2(g)} + \text{NO}_{(g)} \rightarrow \text{CO}_{(g)} + \text{NO}_{2(g)}$, sketch the shapes of the curves on the following graphs assuming that some CO_2 and NO is placed in a closed container and left to react. (2 marks)

