

2(a)(i)	homolytic fission
2(a)(ii)	$\begin{array}{c} \cdot\ddot{\text{O}}\cdot \\ \cdot\ddot{\text{O}}\cdot \end{array} \cdot \ddot{\text{N}} \cdot \begin{array}{c} \cdot\ddot{\text{O}}\cdot \\ \cdot\ddot{\text{O}}\cdot \end{array} \quad \text{H} \cdot \begin{array}{c} \cdot\ddot{\text{O}}\cdot \\ \cdot\ddot{\text{O}}\cdot \end{array} \cdot \ddot{\text{N}} \cdot \begin{array}{c} \cdot\ddot{\text{O}}\cdot \\ \cdot\ddot{\text{O}}\cdot \end{array}$
2(a)(iii)	115–120°
2(b)	M1: $3.825 \times 10^{-3} / 0.003825 / 0.00383 / 0.0038 / 3.8 \times 10^{-3}$ M2: units = $\text{mol}^{-1} \text{dm}^3 \text{s}^{-1}$
2(c)	not constant half-life because overall second order
2(d)	8.17 / 8.2
2(e)	• reactants are adsorbed onto the catalyst surface • bonds within reactant molecules are weakened • products are desorbed from catalyst surface Any two [1], all three [2]