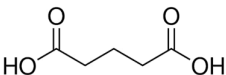


Question 17 (Answer: **A**)

- Equation 1 balances as $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$ with whole numbers.
- Equation 3 balances as $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$.
- Equation 2 fails on magnesium: 4Mg cannot give only 2MgO .

3(a)	simplest /lowest (whole number / integer) ratio of atoms (of each element) in a compound / molecule
3(b)	two of: 
3(c)(i)	homolytic
3(c)(ii)	M1 $\text{C}_5\text{H}_{10} + \text{Cl}\cdot \rightarrow \text{C}_5\text{H}_9\cdot + \text{HCl}$ M2 $\text{C}_5\text{H}_9\cdot + \text{Cl}_2 \rightarrow \text{C}_5\text{H}_9\text{Cl} + \text{Cl}\cdot$
3(c)(iii)	termination
3(d)(i)	$\text{HCl}(\text{g})$
3(d)(ii)	M1 (reaction 1): $-3115 - 286 + 3292 = -109 \text{ (kJ mol}^{-1}\text{)}$ M2 $\Delta\text{H}_2 = -53 - (-109) = (+)56 \text{ (kJ mol}^{-1}\text{)}$
3(e)(i)	
3(e)(ii)	M1 absorption labelled at approx. 3000 cm^{-1} identified as O—H M2 absorption labelled at approx. 1720 cm^{-1} identified as C=O