Question	Marking Guidance	Mark	Comments
4(a)	MgO is ionic	1	If not ionic, CE = 0
	Melt it	1	If solution mentioned, cannot score M2 or M3
	(Molten oxide) conducts electricity	1	Allow acts as an electrolyte. Cannot score M3 unless M2 is correct.
4(b)	Macromolecular	1	CE = 0 if ionic, metallic or molecular. Allow giant molecule.
	Covalent bonding	1	Giant covalent scores M1 and M2
	Water cannot (supply enough energy to) break the covalent bonds / lattice	1	Hydration enthalpy < bond enthalpy.
4(c)	(Phosphorus pentoxide's melting point is) lower	1	If M1 is incorrect, can only score M2
	Molecular with covalent bonding	1	M2 can be awarded if molecular mentioned in M3
	Weak / easily broken / not much energy to break intermolecular forces ***OR*** weak vdW / dipole-dipole forces of attraction between molecules	1	Intermolecular / IMF means same as between molecules.

4(d)	Reagent (water or acid) Equation eg $MgO + 2HCl \rightarrow MgCl_2 + H_2O$	1 1	Can be awarded in the equation. $MgO + H_2O \rightarrow Mg(OH)_2$ Equations can be ionic but must show all of the reagent eg $H^+ + Cl^-$ Simplified ionic equation without full reagent can score M2 only. Allow $6MgO + P_4O_{10} \rightarrow 2Mg_3(PO_4)_2$
4(e)	$P_4O_{10} + 12NaOH \rightarrow 4Na_3PO_4 + 6H_2O$	1	Allow P_2O_5 and acid salts. Must be NaOH not just hydroxide ions.