Question	Marking Guidance	Mark	Comments
3(a)	Na_2O ionic	1	mention of molecules/intermolecular forces/delocalised electrons, CE = 0
	Strong forces between ions/strong ionic bonding	1	Allow lots of energy to break bonds provided M1 scored
	SiO_2 macromolecular	1	Allow giant molecular/giant covalent. If ions mentioned, CE = 0
	Strong <u>covalent bonds</u> (between atoms)	1	Allow lots of energy to break <u>covalent</u> bonds If breaking intermolecular forces are mentioned, CE = 0 for M4
3(b)	Higher	1	
	Li^+ (or Li ion) smaller than Na^+	1	Must imply Li^+ ion Allow Li^+ has higher charge/size ratio **not** charge/mass
	Attracts O^{2-} ion more strongly	1	Allow stronger ionic bonding Allow additional attraction due to polarisation in Li_2O M3 can only be scored if M2 gained
3(c)(i)	Molecular	1	Do not allow simple covalent BUT simple covalent molecule scores M1 and M2
	Covalent bonds (between P and O)	1	Ignore reference to van der Waals' or dipole-dipole

3(c)(ii)	Weak van der Waals' forces and/or dipole-dipole forces <u>between molecules</u>	1	Allow weak <u>inter-molecular</u> forces – can score "between" molecules in (c)(i) CE = 0 if ionic or macromolecular mentioned in (c)(i) Must state van der Waals' forces are weak ***OR*** low energy needed to break van der Waals' forces

3(d)	Allow –1 to +2	1	
	$P_4O_{10} + 6H_2O \rightarrow 12H^+ + 4PO_4^{3-}$ (or $4H_3PO_4$)	1	Allow balanced equations to form HPO_4^{2-} or $H_2PO_4^-$ ignore state symbols
	Allow 12 to 14	1	
	$Na_2O + H_2O \rightarrow 2Na^+ + 2OH^-$	1	Allow $2Na^+ + O^{2-}$ on LHS, 2NaOH on RHS, ignore s.s. Mark independently

3(e)	$6Na_2O + P_4O_{10} \rightarrow 4Na_3PO_4$	1	
	Acid-base	1	Allow neutralisation, mark independently of M1 Do not allow Acid + Base $\rightarrow$ Salt + Water