

Name of the Student: _____

Max. Marks : 14 Marks

Time : 14 Minutes

Mark Schemes

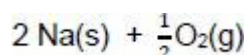
Q1.

- (a) (Ions are) point charges
 OR
 (Ions are) perfect spheres
 OR
 No covalent character

*Do not accept atoms or molecules in answer**Allow no polarisation of ions*

1

- (b) $2 \text{Na}^+ (\text{g}) + 2 \text{e}^- + \text{O}(\text{g})$



2

- (c) $-416 + x = 248 + (2 \times 109) + (2 \times 494) - 142 + 844$

enthalpy of lattice dissociation = (+) 2572 kJ mol^{-1} *-2572 (kJ mol⁻¹) scores 1 mark*

2

- (d) O^- repels the electron (being added)

Allow negative ion repels electron

1

- (e) Oxide ions

M1 have higher (negative) charge

OR

smaller size

OR

higher charge density/higher charge:size ratio (than chloride ions).

M2 stronger attraction between (O^{2-} and Na^+ /oppositely charged) ions*Ignore electronegativity*

2

- (f) Enthalpy of solution = $771 - 406 - 364$

 $= (+)1 \text{ kJ mol}^{-1}$ *Allow 1 mark for -1 (kJmol⁻¹)*

2

- (g) It reacts with water

OR

It reacts to form (a solution of) NaOH
Do not accept - It dissolves in water

1

(h) **M1** $T = \Delta H / \Delta S$

M2 $T = \frac{411}{90.1 \times 10^{-3}} = 4562 \text{ (K)}$

M3 $T = 4562 - 273 = 4289 \text{ (}^\circ\text{C)}$

$M3 = M2 - 273$

$M3$: Allow 4290 ($^\circ\text{C}$)

3

[14]