Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Inorganic 2

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) $CaF_2(s) \rightarrow Ca^{2+}(g) + 2F^-(g)$ **1**

(b) (i) Enthalpy change for formation of 1 mol of substance
Allow heat energy change, NOT energy **1**

From its elements **1**

Reactants and products/all substances in their standard states
Or normal states at 298 K, 1 bar (100 kPa) **1**

(ii) $Ca(s) + F_2(g) \rightarrow CaF_2(s)$ **1**

(iii) $\Delta H_f(CaF_2) = \Delta H_a(Ca) + 1st\ IE(Ca) + 2^{nd}\ IE(Ca) + BE(F_2) + 2 \times EA(F) - \Delta H_L(CaF_2)$
Or labelled diagram **1**

$= 193 + 590 + 1150 + 158 + (2 \times -348) - 2602$ **1**

$= -1207\ kJ\ mol^{-1}$
Correct answer scores 3
–842 scores 2 (transfer error)
–859 scores 1 only (using one E.A.)
Units not required, wrong units lose 1 mark **1**

(c) Electrostatic attraction stronger/ionic bonding stronger/attraction between ions stronger/more energy to separate ions
Molecular attraction/atoms/intermolecular forces CE=0 **1**

Because fluoride (ion) smaller than chloride
Do not allow F or fluorine **1**

(d) (i) $\Delta H = \Delta H_L + \Sigma\Delta H_{hyd} = 2237 - 1650 + (2 \times -364)$
Can be on cycle/diagram **1**

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= –141 kJ mol^{-1}

Correct answer scores 2
Units not required, wrong units lose 1 mark

1

(ii) Decreases

If ans to (d)(i) positive allow increases

1

Reaction exothermic/ΔH –ve

If (d)(i) +ve allow endothermic/ΔH + ve

1

(Equilibrium) shifts to left/backwards
(as temperature rises)/equilibrium
opposes the change

If (d) (i) +ve allow shifts to right/forwards/equilibrium opposes the change

If no answer to (d) (i) assume –ve ΔH used
If effect deduced incorrectly from any ΔH CE = 0 for these 3 marks

1

(e) u.v. absorbed: electrons/they move to higher energy (levels)/electrons excited

1

visible light given out: electrons/they fall back down/move to lower energy (levels)

Must refer to absorbing u.v. NOT visible light or this must be implied.

1

[17]

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