15.1 Energy Cycles

Question Paper

Course	DP IB Chemistry
Section	15. Energetics/Thermochemistry (HL only)
Topic	15.1 Energy Cycles
Difficulty	Easy

Time allowed: 10

Score: /5

Percentage: /100

Question 1

What is the correct definition of lattice enthalpy?

A. Enthalpy change when one mole of solid ionic compound is separated into its ions in their standard state

B. Enthalpy change when one mole of electrons is removed from one mole of gaseous atoms

C. Enthalpy change when one mole of solid ionic compound is formed from its gaseous ions under standard conditions

D. Enthalpy change when one mole of a compound is formed from its elements

[1 mark]

Question 2

Which ionic compound has the smallest value for lattice enthalpy?

A. $CaBr_2$

B. NaF

C. MgS

D. MgO

[1 mark]

Question 3

Which ions hydration enthalpy is the least exothermic?

A. Li^+

B. Na^+

C. Mg^{2+}

D. Ca^{2+}

[1 mark]

Question 4

Which steps are endothermic in the Born-Haber cycle for the formation of LiCl?

I. $\frac{1}{2}Cl_2(g) \rightarrow Cl(g)$
II. $Cl(g) + e^- \rightarrow Cl^-(g)$
III. $Li(s) \rightarrow Li(g)$

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[1 mark]

Question 5

Which equation represents the second electron affinity of nitrogen?

A. $\frac{1}{2}N_2(g) + 2e^- \rightarrow N^{2-}(g)$

B. $N(g) + 2e^- \rightarrow N^{2-}(g)$

C. $N_2(g) + 4e^- \rightarrow 2N^{2-}(g)$

D. $N^-(g) + e^- \rightarrow N^{2-}(g)$

[1 mark]