2025 Ch H1 Q22

Section: Chemical Changes and Structure

Topic: Periodicity

Question summary

Which of the following equations represents the electron affinity of chlorine?

Worked solution

Electron affinity is defined as the energy change when one mole of gaseous atoms each gain an electron to form one mole of gaseous ions.

The equation must show a gaseous chlorine atom gaining an electron to form a gaseous chloride ion.

Correct equation: Cl(g) + e^- -> Cl^-(g).

This matches option A.

Final answer

A. Cl(g) + e^- -> Cl^-(g)

Revision tips

- Always use gaseous atoms (not molecules) when writing electron affinity or ionisation equations.

- Ionisation energy: removal of an electron (endothermic).

- Electron affinity: addition of an electron (usually exothermic for halogens).