Topic 10 – Thermodynamics

* I can define the terms enthalpy of lattice dissociation, enthalpy of lattice formation, enthalpy of formation, ionisation energy, enthalpy of atomisation, bond enthalpy and electron affinity
* I can construct Born–Haber cycles and use them to calculate lattice enthalpies
* I can compare lattice enthalpies from Born–Haber cycles with those from calculations based on a perfect ionic model to provide evidence for covalent character in ionic compounds
* I can define the term enthalpy of hydration and use cycles to calculate enthalpies of solution for ionic compounds from lattice enthalpies and enthalpies of hydration and to perform other enthalpy change calculations
* I can explain that ∆H, whilst important, is not sufficient to explain feasible change, that the concept of increasing disorder (entropy change, ∆S) accounts for the above deficiency, illustrated by physical changes and chemical changes, and I can calculate entropy changes from absolute entropy values
* I can explain that balance between entropy and enthalpy determines the feasibility of a reaction given by the relationship: ∆G = ∆H – T∆S (derivation not required), explain that for a reaction to be feasible, the value of ∆G must be zero or negative, and use the relationship ∆G = ∆H – T∆S to determine how ∆G varies with temperature and to determine the temperature at which a reaction becomes feasible