Topic 5 – How Far How Fast?

**Content Opportunities for skills development**

* I can define the term rate of reaction
* I can explain why most collisions to not lead to a reaction
* I can explain that reactions can only occur when collisions take place between particles having sufficient energy, and that this energy is called the activation energy
* I can define the term activation energy
* I can describe the qualitative effect of changes in concentration, and a change in the pressure of a gas, on collision frequency and the rate of a reaction
* I can interpret a Maxwell–Boltzmann distribution of molecular energies in gases
* I can draw and interpret distribution curves for different temperatures
* I can explain the qualitative effect of temperature changes on the rate of reaction
* I can construct an expression for *K*c for a homogeneous system in equilibrium from the equation for a reversible reaction, representing the concentration, in mol dm–3, of a species X involved in the expression for *K*c as [X]
* I can calculate a value for *K*c from the equilibrium concentrations for a homogeneous system at constant temperature
* I can perform calculations involving *K*c
* I can state that the value of the equilibrium constant is not affected either by changes in concentration or addition of a catalyst
* I can predict the qualitative effects of changes of temperature on the value of *K*c
* I can use Le Chatelier’s principle to predict qualitatively the effect of changes in temperature, pressure and concentration on the position of equilibrium
* I can explain why, for a reversible reaction used in an industrial process, a compromise temperature and pressure may be used