

# **AQA GCSE COMBINED SCIENCE (CHEMISTRY)**

## **Year 10 – Summer Term**

### **CONTENT:**

#### **C7 – Energy in reactions**

After this topic, students should know: that energy is transferred to or from the surroundings in chemical reactions, and some examples of these exothermic and endothermic reactions; how to distinguish between exothermic and endothermic reactions on the basis of the temperature change; how to carry out an investigation into energy changes in chemical reactions.

How we can make use of the energy from exothermic reactions; how we can use the cooling effect of endothermic reactions; how to evaluate uses and applications of exothermic and endothermic reactions given appropriate information.

Energy must be supplied to break bonds in the reactants; energy is released when bonds in the products are formed.

How the balance between bonds breaking in the reactants and bond making in the products affect the overall energy change of a reaction; how to calculate the energy transferred in chemical reactions using bond energies supplied.

**C7.1 Exothermic and endothermic reactions; C7.2 Exothermic and endothermic reactions; C7.3 Using energy transfers from reactions; C7.4 Bond energy calculations.**

#### **C8 Rates of reaction**

After this topic, students should know: what we mean by the rate of a chemical reaction; how to collect data on the rate of a chemical reaction; how to calculate the mean rate of a reaction; how to calculate the rate of reaction at a specific time; the factors that can affect the rate of a chemical reaction; collision theory; how to use collision theory to explain the effect of surface area on reaction rate; how increasing the temperature affects the rate of reactions; how to use collision theory to explain this effect.

How, and why, increasing the concentration of reactants in solutions affects the rate of reaction; how, and why, increasing the pressure of reacting gases affects the rate of reaction.

What a catalyst is; why catalysts are important in industry.

What a reversible reaction is; how we can represent reversible reactions.

What happens in the energy transfers in reversible reactions; how a reversible reaction in a closed system can be 'at equilibrium'; that the composition of an equilibrium mixture can be altered by changing conditions, such as concentration.

How changing the pressure affects reversible reactions involving gases; how changing the temperature affects reversible reactions?

**C8.1 How fast? C8.2 Collision theory and surface area. C8.3 The effect of temperature. C8.4 The effect of concentration or pressure. C8.5 The effect of catalysts. C8.6 Reversible reactions. C8.7 Energy and reversible reactions. C8.8 Dynamic equilibrium. C8.9 Altering conditions.**

### **Recommended online resources:**

**Kerboodle**- Digital Textbook – [w:kerboodle.com](https://www.kerboodle.com) u:initialsurname p:initialsurname inst.code:yh7 – the individual lesson breakdown is here.

**BBC Bitesize**: KS4 Science AQA – then find the relevant topics

**YOUTUBE**: 'GCSESCIENCELESSONS' then search for the topic of interest

**Oak National Academy**: Lessons available linked to above topics.