

Pre-Year 12 Assignment Chemistry

Please select **one** of the five assignments outlined below. In this assignment we are looking for clear scientific understanding, correct use of technical vocabulary and good clear use of English to communicate your ideas. Ideally it will be hand-written, although could be word-processed if you prefer. It will give you an opportunity to explore some challenging aspects of chemistry and show your aptitude for the subject. This should be no less than two sides of A4.

<p>Please think back and select a challenging experiment that you have done at GCSE. For the experiment:</p> <ol style="list-style-type: none">1. Write a balanced symbol equation2. Give a detailed method for the experiment3. Discuss likely problems that would lead to an inaccurate result4. Discuss any applications to industry of this experiment and/or how it helps our understanding of chemistry.5. Explain why you have selected this experiment.	<p>Choose a reversible reaction that is carried out in industry. Suitable ones may include: the manufacture of ammonia by the Haber process, the manufacture of sulfuric acid by the contact process or the manufacture of methanol. Discuss how the process may be affected by:</p> <ul style="list-style-type: none">• Changing the temperature• Changing the pressure• Using a catalyst. <p>Include any suitable diagrams and calculations if appropriate. You could include an enthalpy change calculation using bond energy data, reference to Le Chatelier's principle and how maximum profitability is achieved.</p>
<p>Discuss the roles that catalysts play in chemical reactions. As well as including suitable energy level diagrams, balanced chemical equations and theory, you will also include suitable examples from industry or everyday life. There are two types of catalysts that could be investigated: heterogeneous and homogeneous. Suitable reactions to explore could be: catalytic converters in car exhaust systems, the role of concentrated acid in making esters, the role of chlorine radicals in the destruction of ozone or zeolites in cracking of hydrocarbons.</p>	<p>This assignment allows you to investigate bonding and the forces that hold all the particles together in substances. Discuss the structure and properties of the some/all of the following substances:</p> <ul style="list-style-type: none">• Ammonium chloride• Stainless steel• Heavy water• Poly(ethene)
<p>Over the last few years the seventh period of the Periodic table has been completed. Up until now the Periodic Table has provided a systematic method for classifying the elements. Unfortunately it looks as if Period 8 will see the breakdown of the periodic table – find out why this might happen. To do this you will have to develop a greater understanding of the electronic energy levels in the atom and what governs them. Electronically what is the likely order for the elements in Period 8.</p>	