

## Summer Assignment: Chemistry A2

<b>Context – link to Yr 12/13 work:</b>	This task is a preparation for the organic chemistry unit. It reviews some of the organic chemistry studied during AS course.
<b>Task:</b>	<p>Compose an information booklet about different the different organic compounds (functional groups) and their reactions.</p> <p><b>Task 1:</b></p> <p>Research information about the following:</p> <ol style="list-style-type: none"><li>1. Alkanes</li><li>2. Alkenes</li><li>3. Haloalkanes</li><li>4. Alcohols</li><li>5. Carboxylic acids</li><li>6. Esters</li><li>7. Aldehydes</li><li>8. Ketones</li><li>9. Benzene</li><li>10. Acyl chloride</li><li>11. Acid anhydrides</li><li>12. Amines</li><li>13. Amides</li><li>14. Amino Acids</li></ol> <p>For each functional group above include:</p> <ol style="list-style-type: none"><li>a. A general description of the family of compounds</li><li>b. General formula, where appropriate</li><li>c. Prefixes/suffixes and general nomenclature</li><li>d. Examples of compounds</li><li>e. Physical and chemical properties</li><li>f. Interesting facts (optional)</li></ol> <p style="text-align: right;"><b>(70 marks)</b></p> <p><b>Task 2:</b></p> <p>Write an essay on isomerism. The title is <i>Distinguish between Structural and Stereo Isomerism</i>.</p> <p style="text-align: right;"><b>(10 marks)</b></p> <p>Include diagrams where appropriate.</p>

	<p><b>Task 3:</b></p> <p>Research the reactions of the below and provide examples and equations (conditions and mechanisms where appropriate).</p> <ol style="list-style-type: none"> <li>1. Reactions of carbonyl groups with: <ol style="list-style-type: none"> <li>a. NaBH<sub>4</sub> Reduction</li> <li>b. KCN, explain the production of enantiomers when aldehydes and ketones react with KCN.</li> <li>c. Ammonical silver solution (Tollen's reagent)</li> <li>d. Fehling's solution</li> </ol> </li>   <li>2. Reactions of carboxylic acids with: <ol style="list-style-type: none"> <li>a. Alcohols</li> <li>b. LiAlH<sub>4</sub></li> <li>c. PCl<sub>5</sub></li> <li>d. Na<sub>2</sub>CO<sub>3</sub></li> </ol> </li>   <li>3. Reaction of acyl chlorides and acid anhydrides with: <ol style="list-style-type: none"> <li>a. Water</li> <li>b. Alcohols</li> <li>c. Ammonia</li> <li>d. Primary amines</li> </ol> </li>   <li>4. Reaction of primary amines with: <ol style="list-style-type: none"> <li>a. Acid chlorides</li> </ol> </li>   <li>5. Reaction of amino acids with: <ol style="list-style-type: none"> <li>a. Acids</li> <li>b. Bases</li> <li>c. Explain what a Zwitterions are</li> </ol> </li> </ol> <p style="text-align: right;"><b>(20 marks)</b></p>
Resources required:	<ol style="list-style-type: none"> <li>1. AS and A2 chemistry text books.</li> <li>2. Photocopies of relevant pages of chemistry in context</li> <li>3. Chemguide <a href="http://www.chemguide.co.uk/">http://www.chemguide.co.uk/</a></li> <li>4. Photocopies of sample work.</li> </ol>
Expectation for completed work (e.g word count, note format, reading record etc.)	<ul style="list-style-type: none"> <li>• Present your booklet in the order of the set tasks under clear headings. You may choose an appropriate layout for presenting the information required for each task.</li> <li>• The word count for the essay should be between 800-1300 words</li> <li>• <i>You will be marked on completing all the requirements of each task, detail included, presentation grammar and punctuation.</i></li> <li>• <i>You will be awarded a mark out of 100 and a corresponding grade as follows:</i>  <b>A* -90-100</b>  <b>A- 80-89</b> </li> </ul>

	<p><b>B- 70-79</b></p> <p><b>C- 60-69</b></p> <p><b>D- 50-59</b></p> <p><b>E- 40-49</b></p>
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### Summer Reading List Yr 12-13 Reading List – (insert subject)

Book	Chapter or extract	Questions to guide reading (to be completed as notes)
A2Chemistry Book- Nelson Thornes	Carbonyl Groups Esters Amines Amides Acylation Arenes	Use this to complete summer homework.
Chemistry in context (photocopies)		Use this to complete summer homework.
Recommended to buy: <a href="https://www.amazon.co.uk/Chemistry%C2%B3-Introducing-inorganic-physical-chemistry/dp/0199277893/ref=sr_1_2?s=books&amp;ie=UTF8&amp;qid=1465292077&amp;sr=1-2&amp;keywords=chemistry+cube">https://www.amazon.co.uk/Chemistry%C2%B3-Introducing-inorganic-physical-chemistry/dp/0199277893/ref=sr_1_2?s=books&amp;ie=UTF8&amp;qid=1465292077&amp;sr=1-2&amp;keywords=chemistry+cube</a>		