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**LANGDON PARK SIXTH FORM**

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| **Subject: Chemistry** | **Year: Y12** | **Topic: 3.3.5 Alcohols** |

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| ***What does the topic contain and why study the contents***?Alcohols have many scientific, medicinal and industrial uses. Ethanol is one such alcohol and it is produced using different methods, which are considered in this section. Ethanol can be used as a biofuel. In this module the teaching and learning will be focused on the properties and synthesis of alcohols with ethanol as the main example. We will also cover the reaction conditions and the final product of the oxidation reaction of primary, secondary and tertiary alcohols and the laboratory tests for identifying the target products.  |

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| **Key terms**Functional groupsIUPAC nomenclature PolarityCrude oilPrimary, secondary and tertiary alcohol  | FermentationReaction mechanismsElimination reactionsdehydration oxidationaldehydes | ReductionKetonesTollens’ reagentFehling’s reagent |  |

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| **Success criteria** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning**  | **Extension – Cultural Capital and Reading** |
| **3.3.5.1 Alcohol production*** I can write equations and give conditions for the production of alcohols by hydration of alkenes
* I can show the mechanism for formation of ethanol from reaction of ethene with steam with an acid catalyst
* I am able to write an equation, give and justify conditions for the production of ethanol by fermentation of glucose
* I can compare the two methods of producing ethanol
* I can explain the meaning of the term biofuel
* I can evaluate the use of ethanol as a biofuel
* I am able to show using equations how ethanol made by fermentation can be regarded as carbon neutral but that in reality it is not.

**3.3.5.2 Oxidation of alcohols*** I can classify alcohols as primary, secondary or tertiary.
* I can identify products and write equations for oxidation reactions of alcohols.
* I can use chemical reagent tests to distinguish aldehydes and ketones.

**3.3.5.3 Elimination*** I am able to identify products of alcohol elimination reactions
* I can write equations and mechanism for alcohol elimination reactions
* I can show my understanding as how addition polymers can be made from alkenes made this way without using monomers derived from crude oil.

**Required practical 5**Distillation of a product from a reaction. | AQA Chemistry 2nd Edition – Oxford University press: Haloalkane.Study the Chem Sheets informationMaking ethanol by fermentation: <http://www.nuffieldfoundation.org/practical-chemistry/fermentation-glucose-using-yeast>Biofuels website: <http://www.thesolarspark.co.uk/the-science/renewable-energy/bio/> Biofuels website: <http://www.biofuels.co.uk/>Press report about problems with biofuels: <http://www.telegraph.co.uk/earth/energy/biofuels/10520736/The-great-biofuels-scandal.html> BP biofuels resources: <http://bpes.bp.com/secondary-resources/science/ages-14-to-16/energy-electricity-and-forces/biofuels-and-the-future/>Test-tube oxidation reactions of alcohols:<http://www.nuffieldfoundation.org/practical-chemistry/oxidation-alcohols>Disposal breathalysers are available (legal requirement for driving in France)The breathalyser reaction <http://www.nuffieldfoundation.org/practical-chemistry/%E2%80%98breathalyser%E2%80%99-reaction> Giant silver mirror <http://www.nuffieldfoundation.org/practical-chemistry/giant-silver-mirror>*Chemistry Review* article: Oxidation of alcohols (Volume 10, edition 4)Preparation of cyclohexene [http://www.chemsheets.co.uk/Chemsheets%20AS%20079%20(Preparation%20of%20cyclohexene).pdf](http://www.chemsheets.co.uk/Chemsheets%20AS%20079%20%28Preparation%20of%20cyclohexene%29.pdf) *Chemistry Review* article: Heating under reflux (Volume 20, edition 2)*Chemistry Review* article: Distillation (Volume 14, edition 3) | Using molecular models to make different haloalkane.Writing up practical 5.Fortnightly mini-mock Complete all set home work | Attempt chapter end summery questionsPracticing past exam questions | ***Chemistry Review*** |

**Pre-assessment content review**

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| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

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| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

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| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment |