

AQA Chemistry A-level

Topic 3.14 - Organic Synthesis

Flashcards



What is organic synthesis?



What is organic synthesis?

Using reaction mechanisms to create a target molecule from a starting molecule



Why do you try and keep
the number of steps as low
as possible?



Why do you try and keep the number of steps as low as possible?

To improve the percentage yield of the final product



What could cause the yield
of an individual step to be
low? (2)



What could cause the yield of an individual step to be low? (2)

Product left in reaction mixture each time/inefficient separation

Incomplete/reversible reactions



What is the main oxidising agent used in organic chemistry?



What is the main oxidising agent used in organic chemistry?

Acidified potassium dichromate (VI), $K_2Cr_2O_7$ /
 H_2SO_4



What are primary alcohols oxidised to?



What are primary alcohols oxidised to?

Aldehydes, then carboxylic acids



What are secondary alcohols oxidised to?



What are secondary alcohols oxidised to?

Ketones



What are the three main reducing agents used in organic chemistry; what do they reduce?



What are the three main reducing agents used in organic chemistry; what do they reduce?

NaBH_4 (sodium tetrahydridoborate (III)) reduces $\text{C}=\text{O}$ (H^- attacks $\text{C}^{\delta+}$)

H_2 / Ni reduces $\text{C}=\text{C}$

Tin (Sn) / HCl reduces NO_2 to NH_2



What are the two main dehydrating agents used?



What are the two main dehydrating agents used?

Al_2O_3 (vapours passed over it)

Acid-catalysed elimination by H_3PO_4



What does a compound being solid indicate?



What does a compound being solid indicate?

Long C chain or ionic



What does a compound being liquid indicate?



What does a compound being liquid indicate?

Medium C chain or polar bonding or hydrogen bonding



What does a compound being a gas indicate?



What does a compound being a gas indicate?

Short carbon chain or non-polar bonds



What does being soluble in water indicate about a compound?



What does being soluble in water indicate about a compound?

Suggests the compound has polar groups



What does being insoluble
in water indicate about a
compound?



What does being insoluble in water indicate about a compound?

Suggests the compound has nonpolar groups



What does a smoky flame when burnt suggest?



What does a smoky flame when burnt suggest?

High C:H ratio, possibly aromatic



What does a non-smoky flame suggest?



What does a non-smoky flame suggest?

Low C:H ratio, not aromatic



If an excess of primary amine is reacted with bromomethane, what is the product?



If an excess of primary amine is reacted with bromomethane, what is the product?

RNHCH_3 - only one substitution as amine is in excess



Draw a flowchart linking together all organic reactions studied over the two years, with mechanism name and reagents/conditions



Draw a flowchart linking together all organic reactions of benzene, with mechanism name and reagents/conditions



Draw a flowchart linking together all organic reactions of benzene, with mechanism name and reagents/conditions

