

C10 - Organic reactions

<u>Question</u>	<u>Answer</u>
Define a functional group	A group of atoms in an organic molecule that determine its characteristics and reactions.
Give the functional group for an alkene	C=C
Give the functional group for an alcohol	-OH
Give the functional group for a carboxylic acid	-COOH
Give the functional group for an ester	-COO-
Define a homologous series	A group of organic molecules that contain the same functional group but differ in the number of carbon atoms they contain.
Give the general formula for an alkene	C_nH_{2n}
Describe the difference between a displayed formula and a structural formula	The displayed formula shows all the bonds in a molecule, whereas the structural formula shows the number of atoms, but highlights the functional group. E.g. The structural formula for ethanol is C_2H_5OH
Define an addition reaction	A reaction of an alkene where the double bond is opened up and other atoms are added to the free bonds.
Give the product of the reaction of an alkene with a halogen	A dihalo-alkane. E.g. $\text{Ethene} + \text{bromine} \rightarrow \text{Dibromoethane}$
Give the product of the reaction of an alkene with hydrogen	An alkane. E.g. $\text{Ethene} + \text{hydrogen} \rightarrow \text{Ethane}$
Give the conditions for reacting an alkene with hydrogen	Heat to 60°C with a Nickel catalyst
Give the product of the reaction of an alkene with water (steam)	An alcohol. E.g. $\text{Ethene} + \text{water (steam)} \rightarrow \text{Ethanol}$

Give the conditions to react an alkene with steam	High pressure and temperature
Give the products of the reaction of sodium with ethanol	Sodium ethoxide + hydrogen
Explain why are carboxylic acids described as weak acids	They partially ionise when dissolved in water.
Describe how alcohols can be converted to carboxylic acids	Reacting with an oxidising agent
Describe how ethanol can be made	<ul style="list-style-type: none"> • Fermentation of glucose • Reaction of ethene with water
Give the uses of alcohols	Fuels, solvents, alcoholic drinks
Name the products made when sodium carbonate + ethanoic acid react	Sodium ethanoate + water + carbon dioxide
Give the general equation to make esters	Carboxylic acid + alcohol → Ester + water
Name the products made when ethanoic acid + ethanol react	Ethyl ethanoate + water

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