

Rates and Equilibrium

Organic Chemistry

Chemical Analysis

Chemistry of the Atmosphere

Using Resources

Alkenes

Hydrocarbons and Crude Oil

Alkanes

Fractional Distillation

Properties of Hydrocarbons

Cracking

Alkenes

Reaction of Alkenes

Alcohols

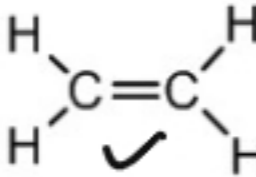
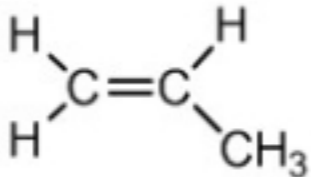
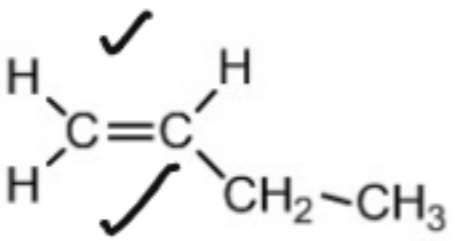
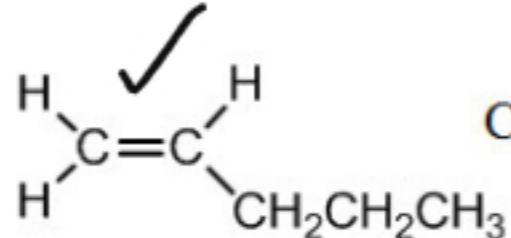
Carboxylic Acid

Addition Polymerization

Condensation Polymerization

Amino Acids

DNA

IUPAC Name	Molecular Formula	Structural Formula	Condensed Formula
Ethene	C_2H_4		$CH_2=CH_2$
Propene	C_3H_6		$CH_2=CHCH_3$
1-Butene	C_4H_8		$CH_2=CHCH_2CH_3$
1-Pentene	C_5H_{10}		$CH_2=CHCH_2CH_2CH_3$

Unsaturated Hydrocarbon

Compounds which have carbon carbon double bond

Compounds made up of carbon and hydrogen only

GENERAL FORMULA



Useful to make polymers, alkanes, alcohols

	FERMENTATION	HYDRATION OF ETHENE
REACTION	$\text{Glucose} \xrightarrow{\text{yeast}} \text{Ethanol} + \text{carbon dioxide}$ $\text{C}_6\text{H}_{12}\text{O}_6 \longrightarrow 2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2$	$\text{Ethene} + \text{Steam} \longrightarrow \text{Ethanol}$ $\begin{array}{c} \text{H} \\ \\ \text{C} = \text{C} \\ \\ \text{H} \end{array} + \text{H}_2\text{O} \longrightarrow \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{C} - \text{OH} \\ \\ \text{H} \end{array}$
REACTION CONDITIONS	Gentle temperature and pressure. Anaerobic conditions	Nickel catalyst and high temperature and pressure
ADVANTAGES	Uses renewable resources like sugarcane. Less dependent on fossil fuels and due to less energy requirements do not harm the environment.	It is a continuous process. It is rapid more efficient and have 100% atom economy. Produces more pure ethanol
DISADVANTAGES	It is a batch process. The ethanol has to be distilled from time to time as high concentration will kill the yeast. The reaction is slow and produces impure ethanol. Also the atom economy is not 100%	Requires ethene which is dependent on crude oil. Uses non renewable resources.

REACTIONS OF ALKENES

COMBUSTION

INCOMPLETE

COMPLETE

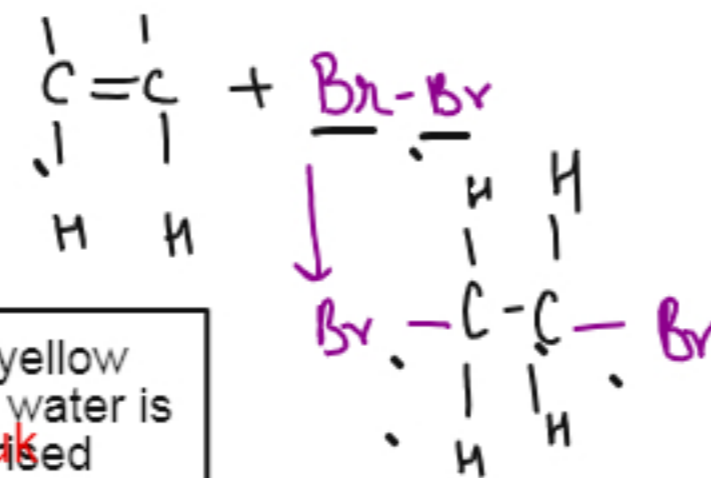
ADDITION REACTIONS

HALOGENS

HYDROGEN

WATER

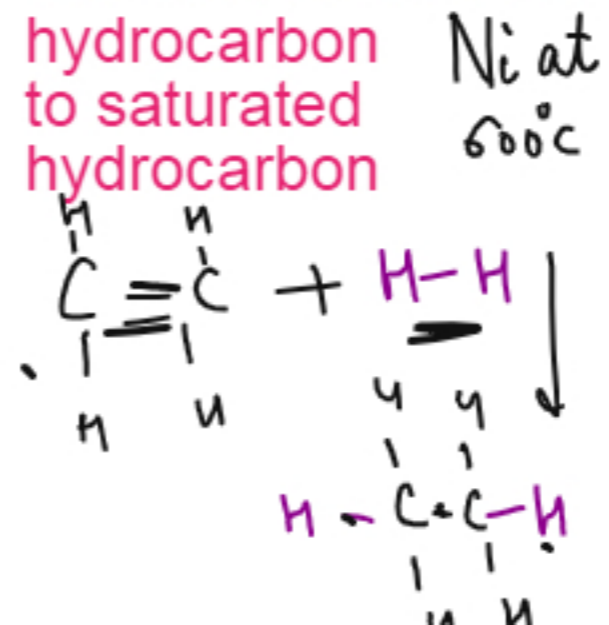
Test for alkenes



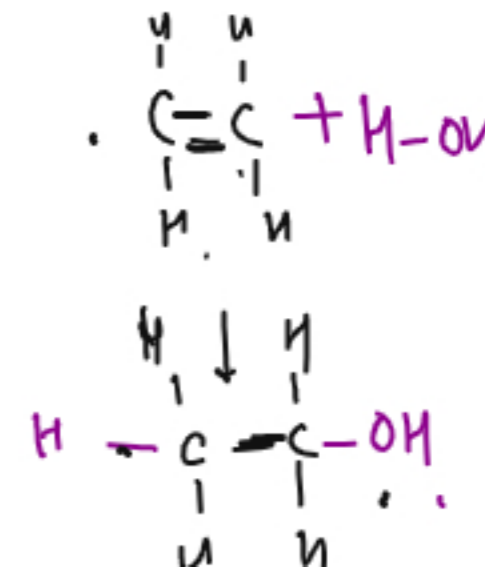
Orange yellow bromine water is decolourised

www.expertguidance.co.uk
mahima.laroyia@expertguidance.co.uk
+447448352272

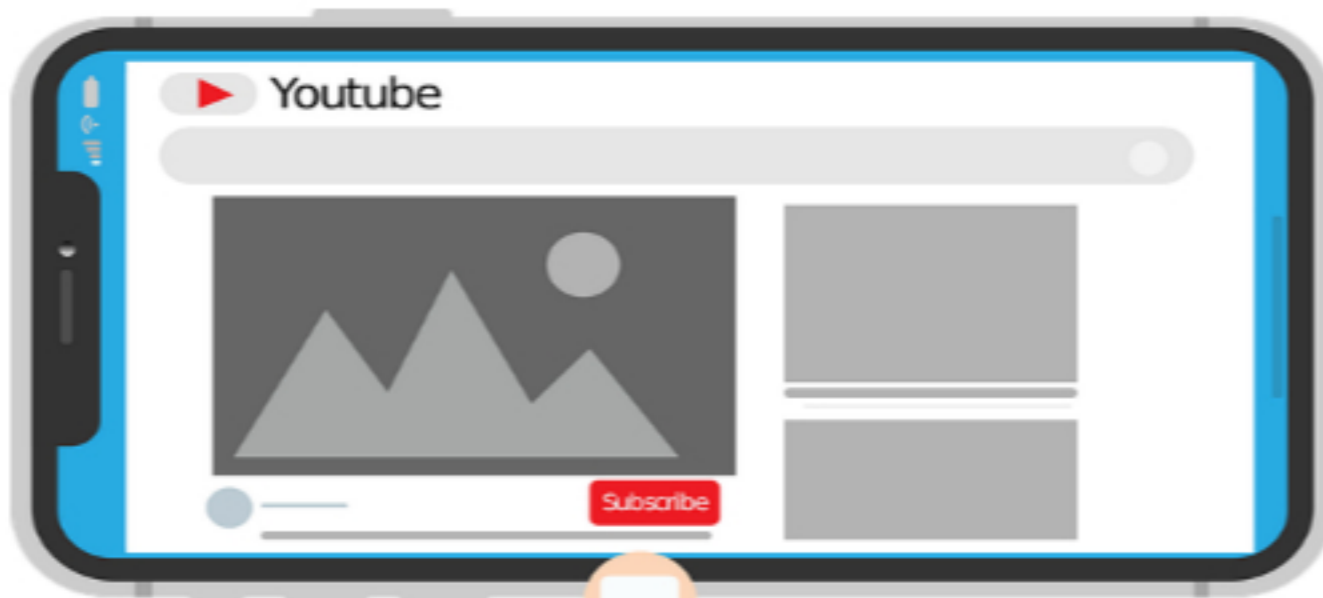
converts unsaturated hydrocarbon to saturated hydrocarbon



produces ethanol



NEXT STEP



CHECK SPECIFICATION



EXAM QUESTIONS ON THIS TOPIC

www.expertguidance.co.uk
mahima.laroyia@expertguidance.co.uk
+447448352272