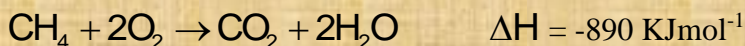


## CHAPTER 13

# HYDROCARBONS

### Combustion:

Alkanes on heating in presence of air, undergoes oxidation to give  $\text{CO}_2$  &  $\text{H}_2\text{O}$  with large amount of heat.

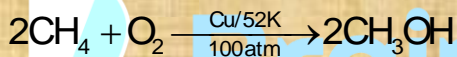


Due to evolution of large quantity of heat, alkanes are used as fuels.

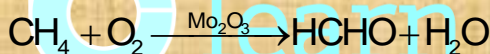
### Controlled oxidation:

Oxidation of alkanes gives various products.

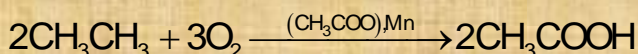
a) Oxidation of methane with copper at 523K and 100 atm pressure gives methanol.



b) Oxidation of methane with molybdenum oxide gives methanol.

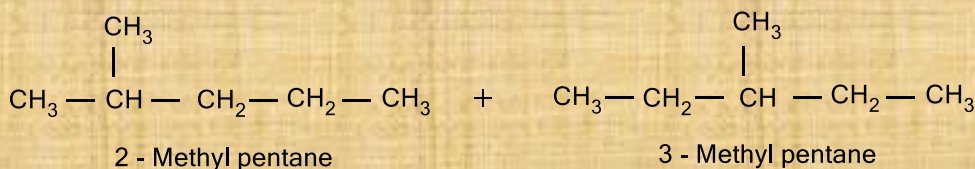
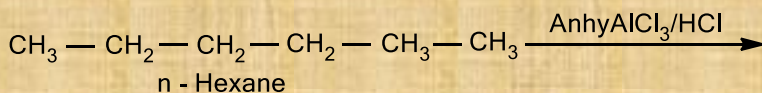


c) Oxidation of ethane with manganese acetate gives ethanoic acid.



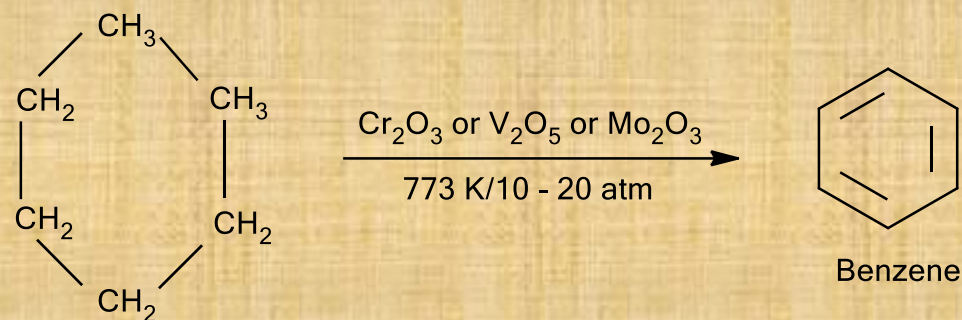
### Isomerism:

Straight chain alkanes on heating with Aluminium chloride in presence of HCl isomeric to branched chain alkanes.



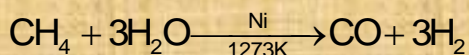
### Aromatisation:

Straight chain alkanes with six or more carbons on heating to 773K at 10 – 20 atm pressure, in presence of oxides of vanadium, molybdenum or chromium, dehydrogenated to give aromatic hydrocarbons.



### Reaction with steam:

Methane reacts with steam at 1273K in presence of catalyst to give syngas (CO + H<sub>2</sub>).



### Pyrolysis:

Alkanes on heating to higher temperature decompose to lower alkanes, alkenes, hydrogen etc. This is called Pyrolysis (or) Cracking.

