

GCSE Chemistry A (Gateway Science)

J248/02 C4-C6 and C7 Foundation (Foundation Tier)

Question Set 24

1 This question is about hydrocarbons.

The table shows some information about alkanes.

Name of alkane	Molecular formula	Structure
Methane	CH ₄	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$
EthaneC ₂ H ₆	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$
.....Butane.....	C ₄ H ₁₀	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \text{.....} \end{array}$

(a) Complete the table.

[3]

(b) Ethane is a **saturated hydrocarbon**.

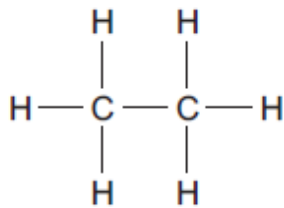
Explain why ethane is called both a hydrocarbon **and** saturated.

[2]

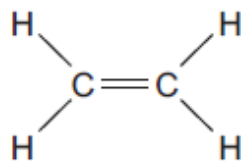
Because it is only composed of hydrogen and carbon. - thus called hydrocarbon

It is also saturated because no carbon form double bond / ethane contains only single bonds between carbon atoms.

(c) A student has two test tubes. One contains **ethane** and one contains **ethene**.



Ethane



Ethene

The student added **bromine water** to each test tube.

Describe what she observes.

Ethane *Remains orange*

Ethene *colour changes from orange to colourless*

[2]

(d) Ethane belongs to the **homologous series** called the alkanes.

What is the name of the homologous series that **ethene** belongs to?

alkenes

[1]

(e) Pentane, C_5H_{12} , is an alkane found in petrol.

Pentane undergoes **complete combustion** in excess oxygen, O_2 .

Carbon dioxide and water are made.

Write the **balanced symbol** equation for the complete combustion of pentane.

[2]



Total Marks for Question Set 24: 10

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