

- 1 Crude oil is a mixture of mainly alkanes. Alkanes are a group of chemicals which contain carbon and hydrogen atoms, the smallest of which is methane.

Describe how a mixture of alkanes can be separated using fractional distillation.

[3 marks]

Heat or evaporate the crude oil to make it into a vapour [1]

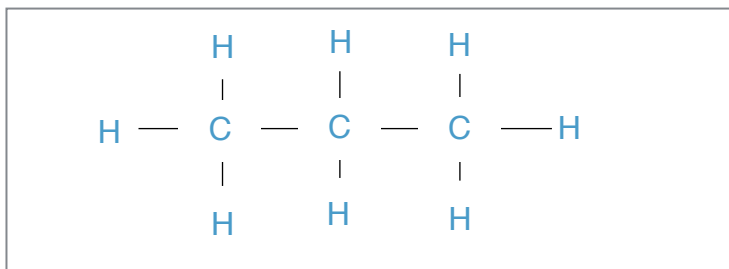
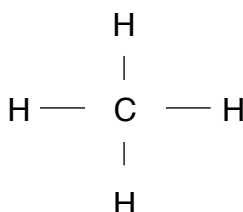
No marks for mentioning 'cracking'.

Cool or condense the hydrocarbons or the fractions [1]
or small molecules at top and / or large molecules at bottom

At different temperatures or boiling points [1]

NB - Examiners report how lots of people get this process wrong. Its' one that is easy to understand but not as easy to write down. These are the important points written in the correct way.

- 1 (a) (i) The alkane methane has the following structural formula.



Draw the structural formula of propane in the box above.

Bit harsh to give no clues in the question about the structure of propane, but the spec does say you need to know it along with methane and ethane.

[2 marks]

- 1 (a) (ii) Alkanes are described as consisting of **saturated hydrocarbon molecules**.

What is the meaning of **saturated hydrocarbon molecules**?

[2 marks]

Contain hydrogen and carbon only. [1]

No double bonds [1]

between the carbon atoms. [1]

(Total 7 marks)

End

Note the question is not just asking about 'saturated' molecules but also hydrocarbon molecules.