Crude oil and hydrocarbons

Edexcel GCSE Chemistry (1CH0) · Foundation and Higher

Answer on your own paper. Show your working where needed.

1. What counts as a hydrocarbon

Which of these formulae represent hydrocarbons? CH_4, CH_3OH, C_3H_8, CO_2. Explain how you decided.

2. The next member of a series

Write the general formula of the alkanes. Use it to find the molecular formula of an alkane with five carbon atoms. Explain what makes it saturated.

3. Two refinery fuels

Kerosene and bitumen are collected at different parts of a crude-oil fractionating column. State one use for each fraction. Identify which is collected higher in the column and explain why.

4. Propane in excess oxygen

Propane has the molecular formula C_3H_8. Write a balanced symbol equation for its complete combustion in oxygen.

5. Faulty fuel burning

A gas flame leaves black deposits on a pan. State the substance in the deposit and explain what a limited oxygen supply can do to the products of combustion.

6. A refinery reaction

A refinery cracks one molecule of a hydrocarbon with formula $C_{12}H_{26}$ to form one molecule of C_8H_{18} and one other molecule. Work out the other formula. Explain how cracking can meet the demand for two different kinds of product.

7. Use bromine water

Bromine water stays orange with sample A and becomes colourless with sample B. The samples are propane and propene. Identify both. Draw the product of B reacting with bromine, showing all its bonds.

8. A surplus of heavy fractions

A refinery has surplus long-chain hydrocarbons and needs more petrol-range fuel and more feedstock for making polymers. An operator proposes distilling the surplus a second time. Explain why that will not achieve both aims. Suggest a process that could.

9. Extra challenge · Check two refinery products

A refinery breaks one molecule of $C_{13}H_{28}$ into one molecule of C_9H_{20} and one other molecule. Calculate its formula. A sample of the other product reacts with bromine water.

The refinery confirms it is but-2-ene. Draw the product formed with bromine, showing all its bonds. State one reason the refinery may need to break the larger molecules.

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