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SPECA

GCSE Combined Science (AQA Trilogy) · Chemistry

Organic Chemistry · Worksheet

This topic has no Higher-tier-only content in the AQA Trilogy specification: all questions below apply to both tiers.

Crude oil and alkanes

1) Describe what crude oil is and how it was formed. **[2]**

2) State the general formula for alkanes. **[1]**

3) Name the first four alkanes, in order of increasing chain length. **[4]**

4) A hydrocarbon has the formula C_3H_8. Name this alkane, and explain how its formula confirms it fits the general alkane formula. **[2]**

5) Explain what fractional distillation does to crude oil, describing the process in terms of evaporation and condensation. **[3]**

6) Name two products made from processed crude oil fractions, and give one commercial use of each. **[2]**

Hydrocarbon properties and combustion

7) State how boiling point changes as hydrocarbon molecule size increases. **[1]**

8) State how viscosity changes as hydrocarbon molecule size increases. **[1]**

9) State how flammability changes as hydrocarbon molecule size increases. **[1]**

10) Using the trends in boiling point, viscosity, and flammability, explain why a short-chain hydrocarbon fraction is more suitable as a fuel for a car engine than a long-chain fraction. **[2]**

11) Write a balanced symbol equation for the complete combustion of propane (C_3H_8) in oxygen. **[3]**

12) State what is meant by complete combustion, and name the two products it always forms when a hydrocarbon burns completely. **[2]**

Cracking and alkenes

13) Explain, in general terms, why cracking is carried out on some crude oil fractions. **[2]**

14) Describe the products formed by cracking a hydrocarbon. **[2]**

15) A student adds bromine water to two unlabelled hydrocarbon samples. Sample X decolourises the bromine water; sample Y does not. Identify which sample is more likely to be an alkene, and explain your answer. **[2]**

16) Explain why the alkenes produced by cracking are useful, beyond simply relieving demand for small-molecule fuels. **[2]**

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