



Oxford Cambridge and RSA

GCSE Chemistry B (Twenty First Century Science)

J258/04 Depth in chemistry (Higher Tier)

Question Set 24

1. Crude oil is a source of useful chemicals.

(a) Which **two** statements about crude oil are correct?

Tick (✓) **two** boxes.

Crude oil contains hydrocarbons which are used as fuels.

All crude oil compounds have the same empirical formula.

Most compounds in crude oil are alkenes.

Crude oil is a renewable resource.

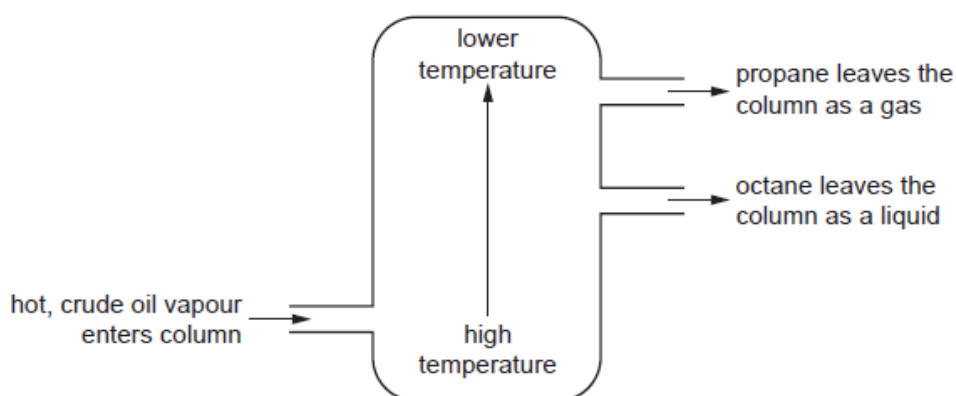
Compounds from crude oil are used as a feedstock for petrochemicals.

[2]

(b) Crude oil is separated using fractional distillation.

Two compounds in crude oil are propane, C_3H_8 , and octane, C_8H_{18} .

The diagram shows where hot, crude oil vapour enters and where propane gas and octane liquid leave the fractionating column.



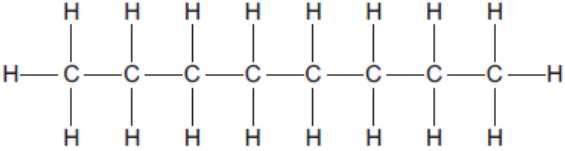
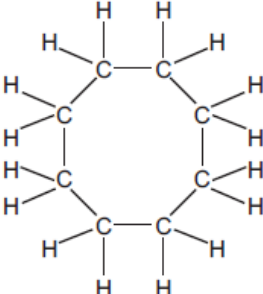
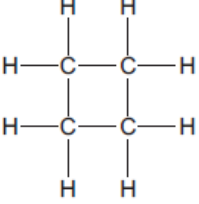
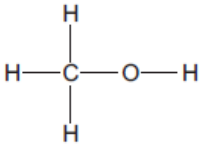
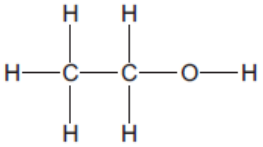
Explain how propane and octane are separated in the column.

Use ideas about boiling points and intermolecular forces in your answer.

[3]

(c) Petrol contains octane, C_8H_{18} , mixed with other carbon compounds.

The table shows octane and some other compounds in petrol.

Type of compound	Example	
alkane	 <p style="text-align: center;">Name: octane</p>	
cycloalkane	 <p style="text-align: center;">Name:</p>	 <p style="text-align: center;">Name:</p>
alcohol	 <p style="text-align: center;">Name: methanol</p>	 <p style="text-align: center;">Name: ethanol</p>

(i) Complete the table by suggesting the names for each cycloalkane. [2]

(ii) The general formula for alkanes is C_nH_{2n+2} .

Suggest the general formulae for cycloalkanes and alcohols.

Use the examples in the table to help you.

General formula of cycloalkanes C_n

General formula of alcohols C_n

[2]

(iii) Carbon makes a greater range of different compounds than any other element.

Which **two** statements explain why?

Tick (✓) **two** boxes.

Carbon has a total of four electrons.

Carbon forms four covalent bonds.

Carbon forms compounds with oxygen and hydrogen.

Carbon atoms can join together in chains and rings.

Carbon is very abundant on Earth.

[2]

Total Marks for Question Set 24: 11

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