0 1 Fractional distillation produces different fuels that can be used for heating, transport and electricity generation.

Some of the fractions produced are less useful and so are in less demand.

Thermal decomposition is used to make the less useful fractions into more useful ones.

0 1 . 1 What is thermal decomposition?

[2 marks]

Breakdown of a substance or compound [1]

by the action of heat or by heating it. [1]

WARNING:
Take care not to use the word decompose here. You need to define BOTH the words "thermal" and "decomposition"

Thermal decomposition is part of the process called cracking.

0 1 . 2 Explain in detail why cracking of crude oil fractions makes them more useful.

[5 marks]

Large molecules made or broken down into smaller molecules [1]

Smaller molecule more useful [1]

as fuels [1]

Compounds with larger molecules do not flow easily [1]

Compounds with larger molecules in less demand or compounds with smaller molecules in more demand.[1]

To produce alkenes or named alkene, e.g. ethene. [1]

To make polymers or plastics. [1]

0 2 The following equation represents the cracking of decane.

$$C_{10}H_{22} \longrightarrow C_8H_{18} + C_2H_4$$

0 2 . 1 Complete the equation to show the other product of this reaction.

[1 mark]

The product shown is an alkene. It can be tested using bromine water.

0 2 . 2 Describe the test that can be used to identify the product as an alkene.

[2 marks]

(Add bromine water), colour change from orange [1]

to colourless [1]

DON'T FORGET:
Lots of students make the mistake of writing clear when they mean colourless...
Clear liquids can still have colour.

(Total 10 marks)

End