

GCSE Chemistry A (Gateway Science)
J248/02 C4-C6 and C7 Foundation (Foundation Tier)

Question Set 27

1 Crude oil is separated into useful fractions using fractional distillation.

The table shows the percentages of crude oil fractions from different oil wells.

| Fraction | Percentage of fraction in crude oil | | |
|----------|-------------------------------------|------------|------------|
| | Oil well X | Oil well Y | Oil well Z |
| LPG | 2 | 7 | 10 |
| Petrol | 3 | 10 | 25 |
| Paraffin | 6 | 15 | 20 |
| Diesel | 7 | 11 | 15 |
| Fuel oil | 26 | 29 | 28 |
| Bitumen | 56 | 28 | 2 |

(a) Which oil well contains the highest percentage of low boiling point fractions?

Tick (✓) **one** box.

X

Y

Z

[1]

(b) A barrel of crude oil from oil well Y has a mass of 139 kg.

Calculate the mass of **fuel oil** in this barrel.

$$139 \times \frac{29}{100} = 40.31$$

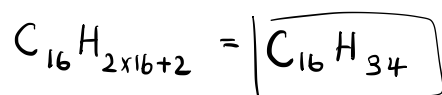
Mass = **40.31** kg [2]

(c) Fractions from crude oil contain alkanes.

Alkanes have the general formula C_nH_{2n+2} .

Write the **formula** of hexadecane, the alkane with 16 carbon atoms.

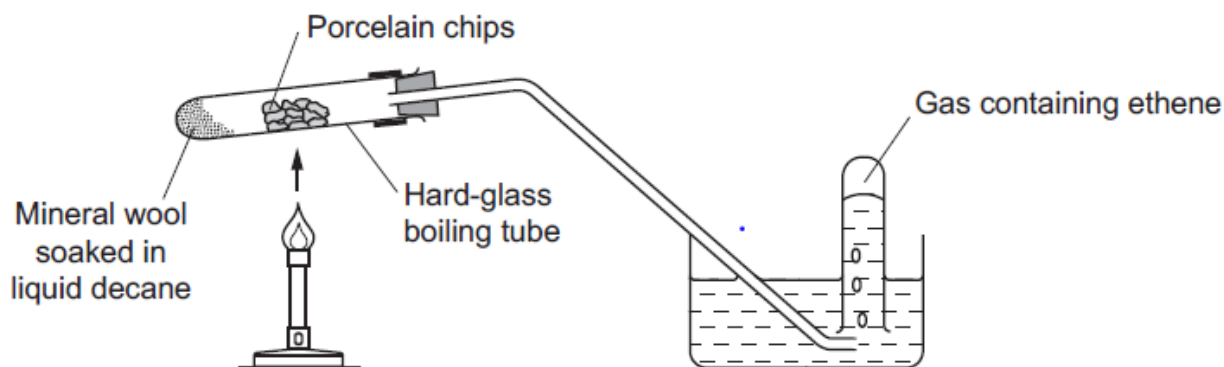
$$n = 16$$



[1]

(d) A sample of decane was cracked.

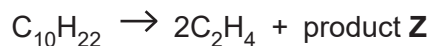
Look at the diagram of the apparatus used.



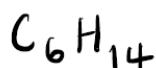
(i) Describe how this apparatus is used to produce ethene from decane.

- When the decane is heated, it vaporises (turns into gas) [2]
- Decane vapour breaks down as it comes into contact with hot porous pot
- Large molecules of decane produce smaller molecules called ethene

(ii) One molecule of decane, $C_{10}H_{22}$, produced two molecules of ethene, C_2H_4 , and one molecule of product Z. [1]



Write the **formula** for product Z.



Total Marks for Question Set 27: 7

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