



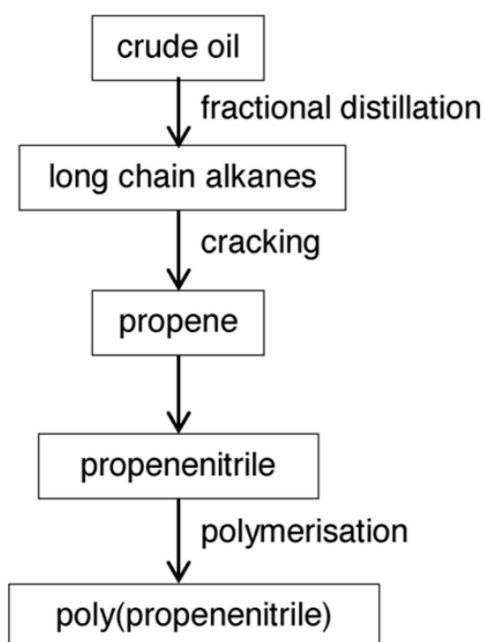
**GCSE Chemistry A (Gateway Science)**  
**J248/04** Chemistry A C4-C6 and C7 (Higher Tier)

**Question Set 22**

1

Poly(propenenitrile) is an addition polymer.

Look at the flow chart. It shows how poly(propenenitrile) is made from crude oil.



(a) Crude oil is a mixture of hydrocarbons.

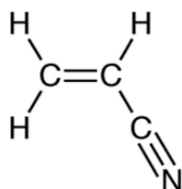
Fractional distillation separates the hydrocarbons in this mixture.

Explain how fractional distillation separates the hydrocarbons, in terms of intermolecular forces.

[2]

The longer the hydrocarbon chain, the greater the van-der-waals forces between the molecules, due to greater surface area/points of contact. This means the boiling point of the hydrocarbons increases with chain length, allowing them to be separated by the condensers at various temperatures in the fractional distillation column.

(b) Look at the displayed formula for propenenitrile.



How can you tell from the displayed formula that propenenitrile is an unsaturated compound?

[1]

It contains a C=C group.

**Total Marks for Question Set 22: 3**