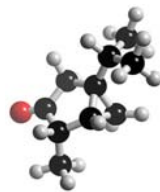


1.6 – ALKANES – PPQ7



Name Form

7) a) Butane, C_4H_{10} , is a hydrocarbon which is used as a fuel.

i) Explain what is meant by the term *hydrocarbon*.

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ii) Explain what is meant by the term *fuel*.

.....

iii) Write an equation for the complete combustion of butane.

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iv) Write an equation for the incomplete combustion of butane to produce carbon monoxide and water.

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v) Under what conditions would you expect incomplete combustion to occur?

..... (5)

b) Ethane can be cracked in the presence of a catalyst to produce ethene and hydrogen.

i) Write an equation for this reaction.

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ii) Give a suitable catalyst for this reaction.

iii) State **one** reason why cracking is important.

.....

..... (3)

c) Write equations, where appropriate, to illustrate your answers to the questions below.

i) Explain why it is desirable that none of the sulphur-containing impurities naturally found in crude oil are present in petroleum fractions.

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ii) The pollutant gas NO is found in the exhaust gases from petrol engines. Explain why NO is formed in petrol engines but is not readily formed when petrol burns in the open air.

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iii) The pollutant gas CO is also found in the exhaust gases from petrol engines. Explain how CO and NO are removed from the exhaust gases and why the removal of each of them is desirable.

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..... (10)