Organic chemistry

Chemistry Paper 2 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 Crude oil pumped from under the North Sea is a thick, dark mixture of many different hydrocarbons. At a refinery it is separated into fractions such as petrol, kerosene and bitumen.

Describe how crude oil is separated into fractions in a fractionating column. (6 marks)

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2 A student at a sixth form in Leeds looks up some properties of four alkanes.

Alkane	Formula	Boiling point in °C	How it flows at 20 °C	How it burns
propane	C_3H_8	-42	gas	clean blue flame, lights instantly
octane	C_8H_{18}	126	runny liquid	lights easily
hexadecane	$C_{16}H_{34}$	287	thicker liquid	hard to light, some smoke
icosane	$C_{20}H_{42}$	343	waxy solid	very hard to light, smoky

Use the data to describe how the properties of alkanes change as the number of carbon atoms increases. Use your knowledge to suggest which of these alkanes would be most useful as a fuel for a camping stove.

(6 marks)

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3 A refinery in Fawley, Hampshire, produces the following amounts of three fractions each day, and has orders for the amounts shown.

Fraction	Carbon atoms per molecule	Amount produced in tonnes	Amount ordered in tonnes
petrol	5-10	1800	3200
diesel	12-20	2400	2600
heavy fuel oil	20-40	2900	900

The manager, Priya Shah, wants to spend money on a new catalytic cracker. Evaluate whether this is a good idea. Use the data and your knowledge of cracking.

(6 marks)

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4 **Higher tier | Separate science only**

Poly(propene) is used to make food tubs. Some polyester fibres used in fleece jackets are made from a diol and a dicarboxylic acid.

Compare how addition polymers like poly(propene) and condensation polymers like polyesters are formed.

(6 marks)

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5 Kofi has three unlabelled bottles. He knows that one contains ethanol, one contains ethanoic acid solution and one contains hexene. He does three tests on a small sample from each bottle.

Bottle	Add bromine water and shake	Add sodium carbonate	Add a small piece of sodium
A	stays orange	no change	slow bubbling
B	turns colourless	no change	no change
C	stays orange	fizzes	fast bubbling

Suggest which substance is in each bottle. Explain your reasoning using the results.

Separate science only

(6 marks)

End of questions | Total 30 marks

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