Your Science Online

Cambridge IGCSE Chemistry 0620 style

ORGANIC CHEMISTRY

Topic practice paper (exam style)

CANDIDATE NAME	
CLASS	
DATE	

50 minutes

You will need: a pen, a pencil, a ruler and a calculator.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes or in the margins.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 44.
- The number of marks for each question or part question is shown in brackets [ ].
- Questions or parts marked **[Extended]** are for Extended-tier candidates. Core candidates may leave them out (Core total: 35 marks).
- Topics: fuels and fractional distillation, homologous series, naming, alkanes and alkenes, cracking, ethanol, carboxylic acids, esters and polymers.

For teacher's use	
Question	**Mark**
1	
2	
3	
4	
5	
Total	

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

1 Petroleum is separated into useful fractions by fractional distillation. Fig. 1.1 shows a fractionating column. The fractions leave the column at A, B, C, D, E and F.

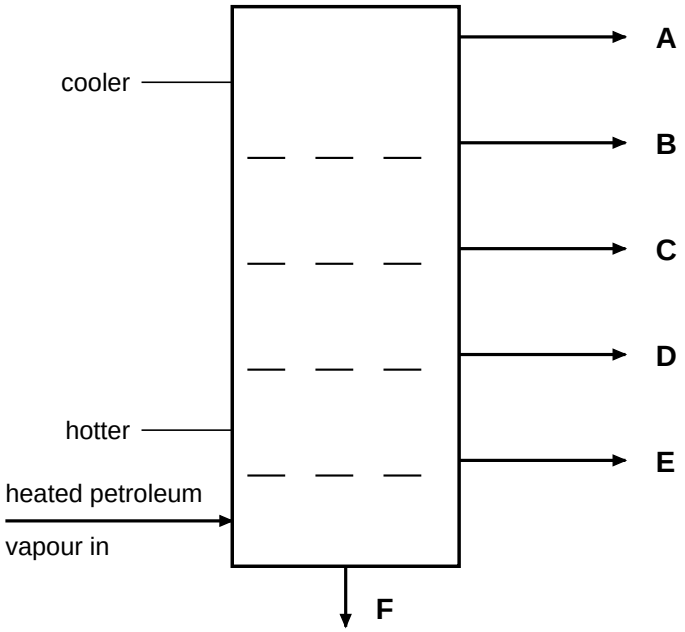


Fig. 1.1

DO NOT WRITE IN THIS MARGIN

(a) State what is meant by *petroleum*.

.....

[1]

(b) Describe how the fractions are separated in the column.

.....

.....

[2]

(c) Use the letters in Fig. 1.1 to answer these questions. Each letter may be used once, more than once or not at all. Which letter shows:

(i) the fraction with the highest boiling point

.....

[1]

(ii) kerosene / paraffin, used as jet fuel

.....

[1]

(iii) naphtha, used as a feedstock for the chemical industry?

.....

[1]

(d) State how the viscosity of the fractions changes going **down** the column.

.....

[1]

[Turn over

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

(e) Natural gas is another fossil fuel.

(i) Name the main substance in natural gas.

..... [1]

(ii) Complete the balanced symbol equation for the complete combustion of this substance.

$$CH_4 + ...O_2 \rightarrow ..... + 2H_2O$$

[2]

2 Fig. 2.1 shows the displayed formulae of four organic compounds, A, B, C and D.

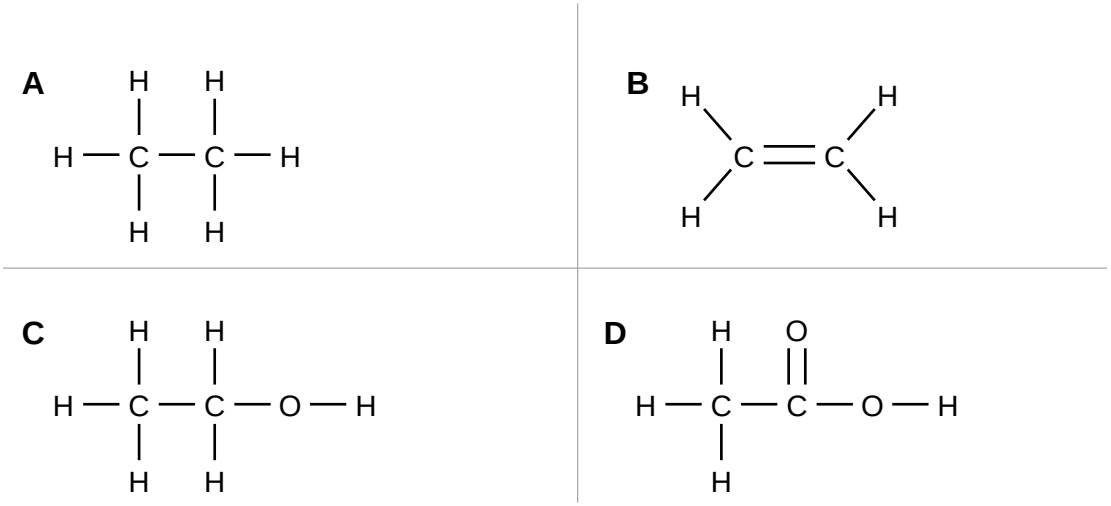


Fig. 2.1

(a) Give the letter of the compound that is an **unsaturated** hydrocarbon.

..... [1]

(b) Give the letter of the compound that is a carboxylic acid.

..... [1]

(c) Name compound C.

..... [1]

(d) Compounds A and B are colourless gases. Describe a chemical test to tell them apart. Give the result for each compound.

test

.....

result with A

.....

result with B

..... [3]

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

(e) ***[Extended]*** Compound B belongs to the alkene homologous series. Write the general formula of the alkenes.

..... [1]

(f) ***[Extended]*** Butane, $CH_3CH_2CH_2CH_3$, and methylpropane, $CH_3CH(CH_3)CH_3$, are *structural isomers*. Explain what is meant by structural isomers.

.....

..... [2]

3 Large alkane molecules from petroleum are cracked to make smaller, more useful molecules.

(a) State **two** conditions used for cracking.

1

.....

2

..... [2]

DO NOT WRITE IN THIS MARGIN

(b) Complete the equation for the cracking of decane.

$$C_{10}H_{22} \rightarrow C_8H_{18} + ...$$

[1]

(c) Give **two** reasons why cracking is important to the petroleum industry.

.....

..... [2]

(d) Ethene made by cracking can react with steam to make an alcohol.

(i) Name the alcohol made.

..... [1]

(ii) State **two** conditions for this reaction.

.....

..... [2]

(e) ***[Extended]*** Ethene also reacts with hydrogen. Name the type of reaction and the product.

type of reaction .....

product ..... [2]

DO NOT WRITE IN THIS MARGIN

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

4 Ethanol can also be made by fermentation.

(a) Complete the word equation for fermentation.

..... → ethanol + ...

[2]

(b) State **two** conditions needed for fermentation.

.....

..... [2]

(c) Give **one** advantage of making ethanol by fermentation instead of from ethene.

..... [1]

(d) Ethanol is used as a fuel. Balance the equation for its complete combustion.

C_2H_5OH + ...O_2 → .....CO_2 + ...H_2O

[2]

DO NOT WRITE IN THIS MARGIN

5 Ethanoic acid is a carboxylic acid.

(a) A student adds magnesium ribbon to aqueous ethanoic acid.

(i) State **one** thing the student would observe.

..... [1]

(ii) Name the salt formed.

..... [1]

(b) ***[Extended]*** Ethanoic acid reacts with ethanol to make an ester.

(i) Name the ester formed.

..... [1]

(ii) Name the catalyst used.

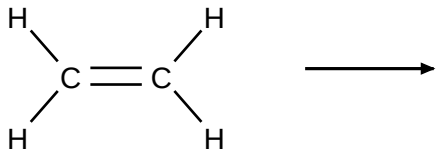
..... [1]

DO NOT WRITE IN THIS MARGIN

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

(c) Ethene is the monomer used to make poly(ethene). In the box in Fig. 5.1, draw the repeat unit of poly(ethene).

monomer: ethene



repeat unit of poly(ethene)

Fig. 5.1

[2]

(d) ***[Extended]*** Poly(ethene) is an addition polymer. Nylon is a condensation polymer. State **two** differences between addition and condensation polymerisation.

.....

.....

..... [2]

END OF PAPER

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.