Oxford Cambridge and RSA

GCSE Chemistry A (Gateway Science)

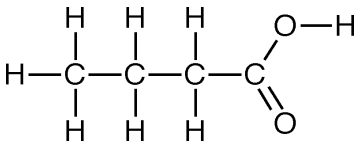
J248/02 C4-C6 and C7 Foundation (Foundation Tier)

Question Set 3

Multiple Choice Questions

C6: Global Challenges

1. Look at the displayed formula of an organic compound.



What is the name of this compound?

A Butanoic acid

B Butanol

C Propanoic acid

D Propanol

Your answer ☐ **[1]**

2. DNA is a condensation polymer made from monomers called nucleotides.

How many different nucleotides are used to make DNA molecules?

A 2

B 3

C 4

D 5

Your answer ☐ **[1]**

3. Ammonium phosphate is used as a fertiliser.

The formula for ammonium phosphate is $(NH_4)_3PO_4$.

Which elements in ammonium phosphate are **essential elements** for plant growth?

A Hydrogen and oxygen

B Nitrogen and hydrogen

C Nitrogen and phosphorus

D Phosphorus and oxygen

Your answer ☐ **[1]**

4. In some remote islands, drinking water is made from sea water.

What is the name of the process for making drinking water from sea water?

A Chlorination

B Distillation

C Filtration

D Sedimentation

Your answer ☐ **[1]**

5. A student bubbles ethene gas into bromine water.

What is observed?

A Colour change from blue to colourless

B Colour change from colourless to orange

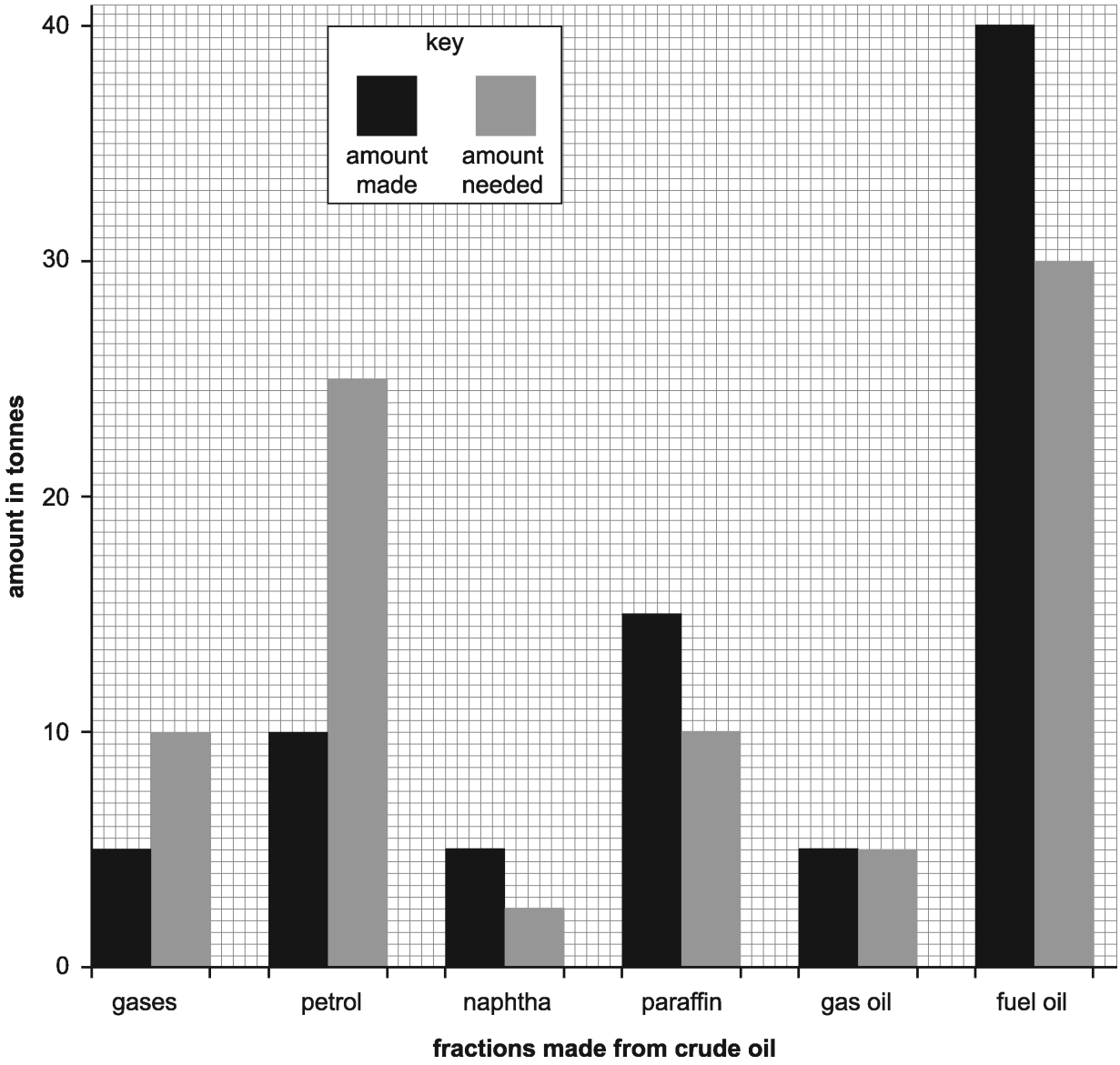
C Colour change from orange to colourless

D Orange precipitate is made

Your answer ☐ **[1]**

6. The bar chart shows the amount of some fractions made from 100 tonnes of crude oil by fractional distillation.

It also shows the amount of each fraction needed for everyday uses.



Cracking converts large molecules into smaller more useful molecules to make the supply match the demand.

Which fractions are most likely to be cracked to make the supply match the demand?

A Gas oil and fuel oil

B Gas oil and petrol

C Naphtha, paraffin and fuel oil

D Petrol and gases

Your answer ☐ **[1]**

7. The **molecular formula** of cyclohexane is C_6H_{12}.

What is the **empirical formula** of cyclohexane?

A CH

B CH_2

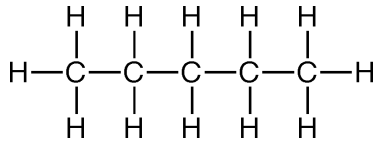
C C_6H_{12}

D $C_{12}H_{24}$

Your answer ☐ **[1]**

8. Which displayed formula includes the functional group of an alcohol?

A



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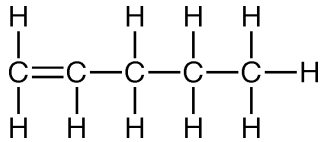

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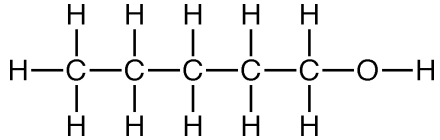

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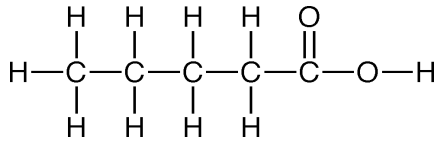


Your answer ☐ **[1]**

9. What is the name of the process that converts large alkane molecules into smaller alkane molecules?

A Cracking

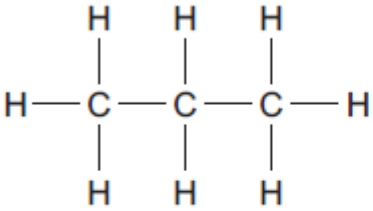
B Fractional distillation

C Hydrogenation

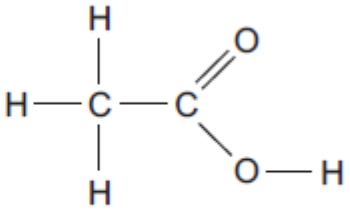
D Polymerisation

Your answer ☐ **[1]**

10. Which displayed formula shows an alkene?



A



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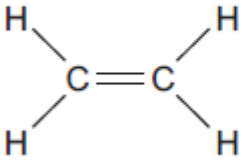

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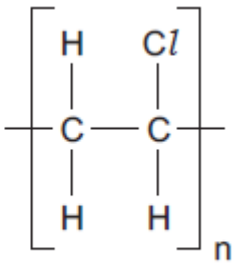


D

Your answer ☐ **[1]**

11. The list shows part of the reactivity series of metals including carbon.

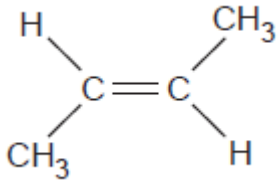
Sodium
Lithium
Calcium
Magnesium
Aluminium
Carbon
Zinc
Iron
Tin
Lead

Which row of the table correctly describes how the metals are extracted from their ores?

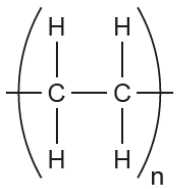
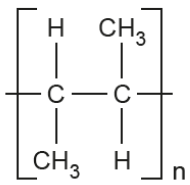
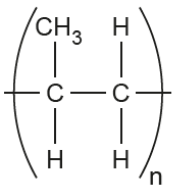
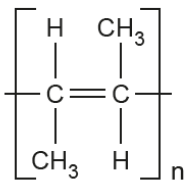
	Metals extracted by electrolysis	Metals extracted by heating with carbon
A	Sodium, Magnesium, Zinc	Aluminium, Iron, Tin
B	Aluminium, Zinc, Iron	Lead, Tin
C	Calcium, Magnesium, Aluminium	Sodium, Iron, Tin
D	Sodium, Calcium, Magnesium	Lead, Tin, Zinc

Your answer ☐ **[1]**

12. Look at the displayed formula of the monomer butene.



What is the formula of the **polymer** formed from butene?

A	B	C	D
			

Your answer ☐ **[1]**

13 DNA molecules are polymers.

What are the monomers that make up DNA called?

A Carbohydrates

B Nucleotides

C Phosphates

D Proteins

Your answer ☐ **[1]**

14 What is the major source of carbon monoxide in the Earth's atmosphere?

A Incomplete combustion of fossil fuels and wood.

B Production in a nuclear power station.

C The combustion of impurities in coal.

D The combustion of impurities in natural gas.

Your answer ☐ **[1]**

15 Look at the following sentences.

They describe one possible theory for how the Earth's atmosphere evolved.

The sentences are not in the correct order.

1	Carbon cycle now keeps the composition of the atmosphere almost constant
2	Initial atmosphere of ammonia and carbon dioxide
3	Increase in oxygen and nitrogen levels
4	Photosynthetic organisms began to make oxygen
5	Degassing from the Earth's crust and formation of water

What is the correct order for the sentences?

A 2, 4, 3, 5, 1

B 2, 5, 4, 3, 1

C 5, 2, 3, 4, 1

D 5, 2, 4, 3, 1

Your answer ☐ **[1]**

16 Look at the information about four different polymers.

Polymer	Cost (£ per kg)	Tensile strength (MPa)	Melting point (°C)	Maximum useable temperature (°C)
A	0.74	15	120	85
B	1.20	78	254	70
C	0.92	35	176	160
D	1.42	42	156	160

Which polymer would be best for making a plastic cup to hold hot drinks?

Your answer ☐ **[1]**

17 Which type of water is **potable** water?

A Groundwater

B Seawater

C Tap water

D Waste water

Your answer ☐ **[1]**

18 How was the Earth's early atmosphere formed?

A Animals breathing

B Global warming

C Plants growing

D Volcanic activity

Your answer ☐ **[1]**

19 Crude oil is a mixture of hydrocarbons.

Crude oil is separated into useful fractions.

Which of these mixtures of substances could be in a fraction from crude oil?

A C_2H_4, C_4H_{10}, $C_4H_{10}O$

B C_2H_4, C_2H_3Br, C_4H_{10}

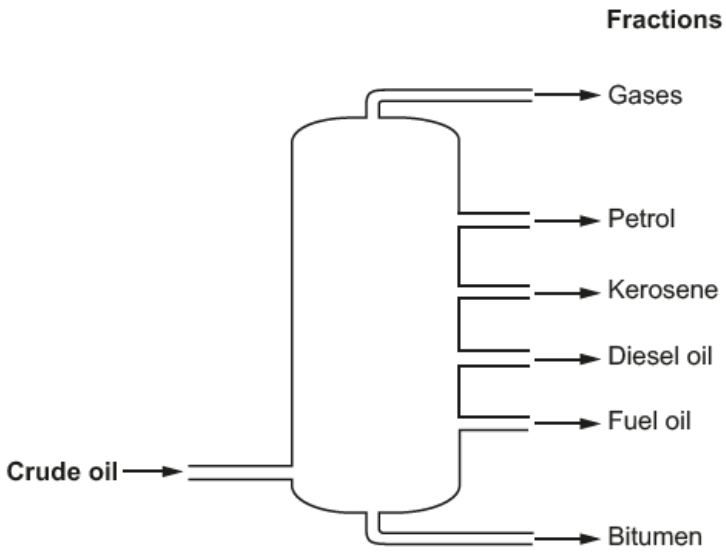
C C_2H_6, C_3H_8, C_4H_{10}

D C_2H_6, C_2H_3Br, $C_4H_{10}O$

Your answer ☐ **[1]**

20 Crude oil is separated into useful fractions by fractional distillation.

The diagram shows the useful fractions made in fractional distillation.



Which of these fractions has the **weakest** intermolecular forces?

A Bitumen

B Diesel oil

C Gases

D Petrol

Your answer ☐ **[1]**

21 What type of reaction takes place between an alkene and hydrogen?

A Addition

B Dehydration

C Neutralisation

D Thermal decomposition

Your answer ☐ **[1]**

22 The table shows the main stages in the life-cycle assessment of a manufactured product.

Stage	Process
1	Manufacturing the product
2	Obtaining raw materials
3	Disposing of the product
4	Using the product

What is the correct order for the stages?

A 1, 2, 3, 4

B 1, 2, 4, 3

C 2, 1, 4, 3

D 2, 4, 1, 3

Your answer ☐ **[1]**

23 The Haber process is used to make ammonia, NH_3.

$N_2 + 3H_2 \rightleftharpoons 2NH_3$

What is the raw material for the **nitrogen**?

A Air

B Hydrochloric acid

C Natural gas

D Seawater

Your answer ☐ **[1]**

24 The table shows the composition of the Earth's early atmosphere compared with the atmosphere today.

	Nitrogen	**Oxygen**	**Argon**	**Carbon dioxide**
Percentage of gas in the early atmosphere	4	0.5	0.5	95
Percentage of gas in the atmosphere today	78	21	0.9	0.04

Which gas has **changed by the largest percentage** from the early atmosphere to the atmosphere today?

A Nitrogen

B Oxygen

C Argon

D Carbon dioxide

Your answer ☐ **[1]**

Total Marks for Question Set 3: 24