PEARSON EDEXCEL GCSE CHEMISTRY · 1CH0

CHEMISTRY



EXAM QUESTION PACK

TOPIC 8: FUELS AND EARTH SCIENCE (PACK 1)

SCORE	PERCENTAGE
/104	%

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Q1.

Figure 7 shows the molecular formulae and boiling points of four alkanes.

alkane	molecular formula	boiling point in °C
propane	C_3H_8	–42
butane	C_4H_{10}	0
pentane	C_5H_{12}	36
hexane	C_6H_{14}	69

Figure 7

(i) Describe how the boiling points of these alkanes change as the numbers of carbon atoms in one of their molecules change.

(1)

.....

.....

(ii) Calculate the relative formula mass of a molecule of propane, C_3H_8.

(relative atomic masses: C = 12, H = 1)

(1)

.....

relative formula mass = ...

(iii) Propane reacts with excess oxygen to form carbon dioxide and water.

Write the word equation for this reaction.

(2)

.....

.....

(iv) Explain a problem caused by the incomplete combustion of propane.

(2)

.....

.....

.....

.....

(Total for question = 6 marks)

Q2.

Propane, C_3H_8, and butane, C_4H_{10}, are members of the same homologous series, called the alkanes.

(i) Explain why both propane and butane are alkanes.

(2)

.....

.....

.....

(ii) Draw the structure of a molecule of butane, C_4H_{10}, showing all covalent bonds.

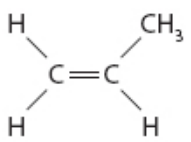
(2)

Q3.

(a) The table shows information about two alkenes.

Complete the table to show the names and structures of these alkenes.

(2)

name	structure of a molecule
ethene	
	

(b) (i) Ethene is an unsaturated compound.

State what is meant by **unsaturated**.

(1)

.....

(ii) Describe what is **seen** when ethene is passed into bromine water.

(2)

.....

.....

.....

(c) Alkenes can be obtained by cracking some fractions obtained from crude oil.

Explain what is meant by **cracking**.

(2)

.....

.....

.....

(d) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Molecules of ethene are reacted together to form poly(ethene).
The reaction taking place is

(1)

☒ **A** combustion

☒ **B** photosynthesis

☒ **C** decomposition

☒ **D** polymerisation

(ii) Poly(ethene) is used to make plastic carrier bags.
Many of these bags are put into landfill sites.

Explain why the presence of waste plastic in landfill sites causes problems.

(2)

.....

.....

.....

.....

.....

(Total for Question = 10 marks)

Q4.

Figure 8 shows one molecule of each of four different substances, **A**, **B**, **C** and **D**.

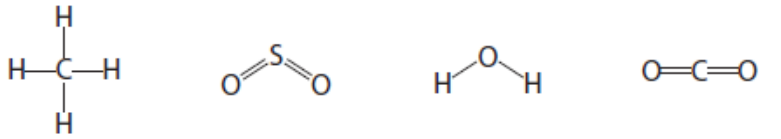


Figure 8

(i) Substance **C** can be formed by burning an element in oxygen.

Write the word equation for this reaction.

(1)

.....

(ii) Consider substances **A**, **B**, and **D**.

Give the letters of the two substances that can be formed by burning an element in oxygen.

(1)

.....

(Total for question = 2 marks)

Q5.

Figure 2 shows the percentage of different gases in the Earth's atmosphere.

gas	percentage of gas
nitrogen	78
oxygen	21
carbon dioxide	0.04
other gases	0.96

Figure 2

This data can be shown on a pie chart.

Calculate the angle that should be used to show the segment for nitrogen on the pie chart.

You must show your working.

(2)

.....

.....

.....

.....

angle = ... degrees

(Total for question = 2 marks)

Q6.

The concentration of carbon dioxide in the atmosphere can be measured in parts per million (ppm).

Figure 1 shows the measurements in January 2018 and January 2019.

	concentration of carbon dioxide in ppm
January 2018	407.96
January 2019	410.83

Figure 1

(i) Calculate the increase in the concentration, in ppm, of carbon dioxide from January 2018 to

January 2019.

Give your answer to the nearest whole number.

(2)

.....

.....

.....

increase in concentration of carbon dioxide = ... ppm

(ii) Give a possible cause for this increase in the concentration of carbon dioxide.

(1)

.....

.....

.....

(Total for question = 3 marks)

Q7.

Propene can be produced by the cracking of some hydrocarbons obtained from crude oil.

The equation shows the cracking of one molecule of decane to produce one molecule of butene and one molecule of another product.

$$\underset{\text{decane}}{C_{10}H_{22}} \rightarrow \underset{\text{butene}}{C_4H_8} + C_xH_y$$

(i) Calculate the values of x and y in C_xH_y.

(2)

x = ... , y = ...

(ii) State the total mass of products formed if 25 g of decane is cracked in this way.

(1)

.....

(Total for question = 3 marks)

Q8.

Crude oil is found in the Earth's crust.

In January 2015 the United Kingdom produced 850 000 barrels of crude oil per day. 45% of this crude oil was fuel oil.

Calculate the number of barrels of fuel oil present in the 850 000 barrels of crude oil.

Give your answer to two significant figures.

(3)

.....

.....

..... barrels

(Total for question = 3 marks)

Q9.

(a) Which of these is the formula of a molecule of a hydrocarbon?

Put a cross (☒) in the box next to your answer.

(1)

☒ **A** CH_3COOCH_3

☒ **B** CH_3CH_2Cl

☒ **C** CH_3CH_3

☒ **D** CH_3COOH

(b) The formula of a molecule of propene is C_3H_6.

Draw the structure of a molecule of propene, showing all covalent bonds.

(2)

(c) Methane burns in oxygen to form carbon dioxide and water.
Write the balanced equation for this reaction.

(3)

.....

*(d) Natural gas is mainly methane.
A gas with similar composition, known as bio-methane, can be produced from plants grown specifically for this purpose.

Describe the advantages and disadvantages of using bio-methane rather than natural gas as a source of energy.

(6)

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(Total for Question is = marks)

Q10.

Four gases were present in the Earth's early atmosphere.

Figure 1 shows the percentages of these gases thought to have been present.

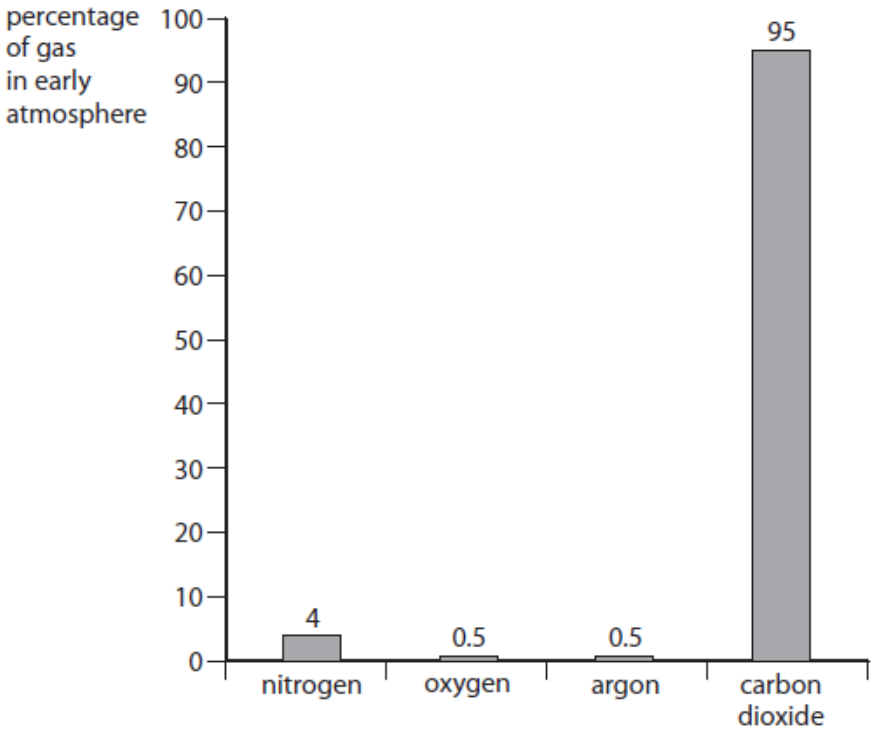


Figure 1

Figure 3 shows the percentage of carbon dioxide in the Earth's atmosphere and the mean temperature on the Earth's surface in 1960 and 2014.

year	percentage of carbon dioxide	mean surface temperature in °C
1960	0.0318	14.0
2014	0.0401	14.4

Figure 3

(i) Calculate the increase in the percentage of carbon dioxide in the Earth's atmosphere from 1960 to 2014.

(1)

.....

.....

increase in percentage = ...

(ii) Give **two** reasons why the information in Figure 3 does not prove that the increase in the percentage of carbon dioxide causes the rise in temperature.

(2)

reason 1

.....

.....

reason 2

.....

.....

(Total for question = 3 marks)

Q11.

Complete the sentence by putting a cross (☒) in the box next to your answer.

(i) The percentage of carbon dioxide in the Earth's atmosphere today is

(1)

☒ **A** greater than 5%

☒ **B** 4%

☒ **C** 3%

☒ **D** less than 0.5%

(ii) The percentage of carbon dioxide in the Earth's atmosphere today is less than that in the Earth's earliest atmosphere.
Explain what has caused the percentage of carbon dioxide to decrease.

(2)

.....

.....

.....

(iii) Carbon dioxide and other gases in the atmosphere help to keep the Earth warm.
State how these gases keep the Earth warm.

(1)

.....

.....

.....

.....

Q12.

Figure 8 shows one molecule of each of four different substances, **A**, **B**, **C** and **D**.

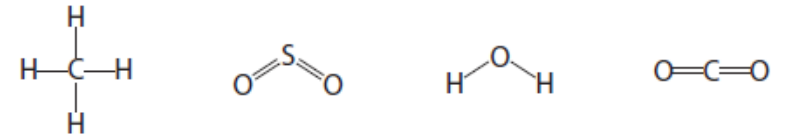


Figure 8

Carbon dioxide is present in the Earth's atmosphere.

Some processes increase the amount of carbon dioxide in the atmosphere, other processes decrease it.

Draw one straight line from each change in the amount of carbon dioxide in the atmosphere to the process causing the change.

(2)

change in the amount of carbon dioxide in the atmosphere	process causing the change
	carbon dioxide absorbing the Sun's energy
increase	carbon dioxide dissolving in oceans
	volcanic emissions
decrease	using argon in light bulbs
	burning hydrogen

(Total for question = 2 marks)

Q13.

Four gases were present in the Earth's early atmosphere.

Figure 1 shows the percentages of these gases thought to have been present.

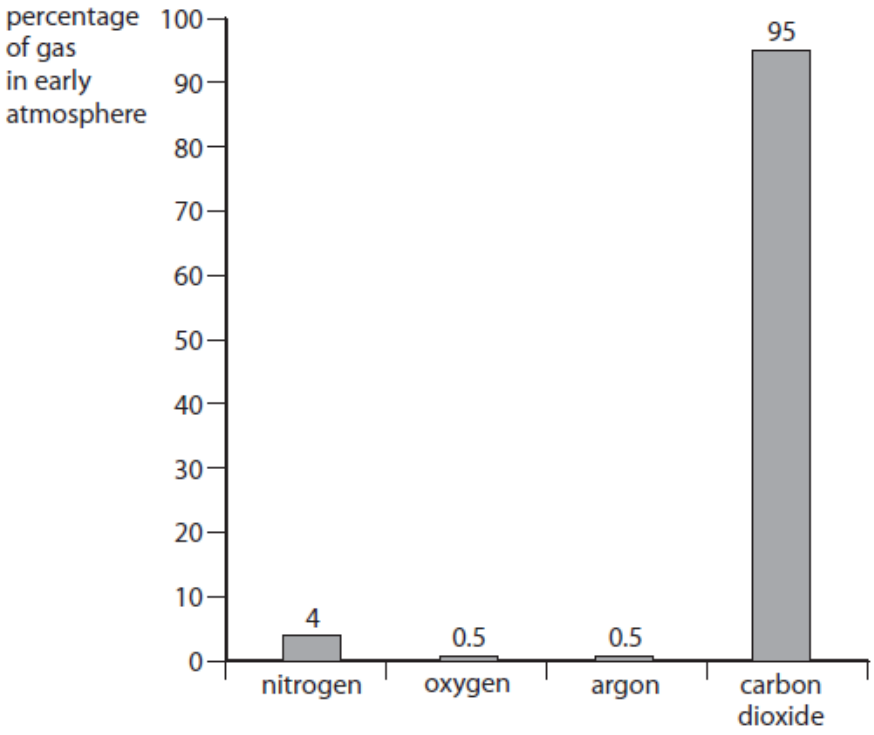


Figure 1

Figure 2 shows the percentages of these four gases in the atmosphere of the Earth today.

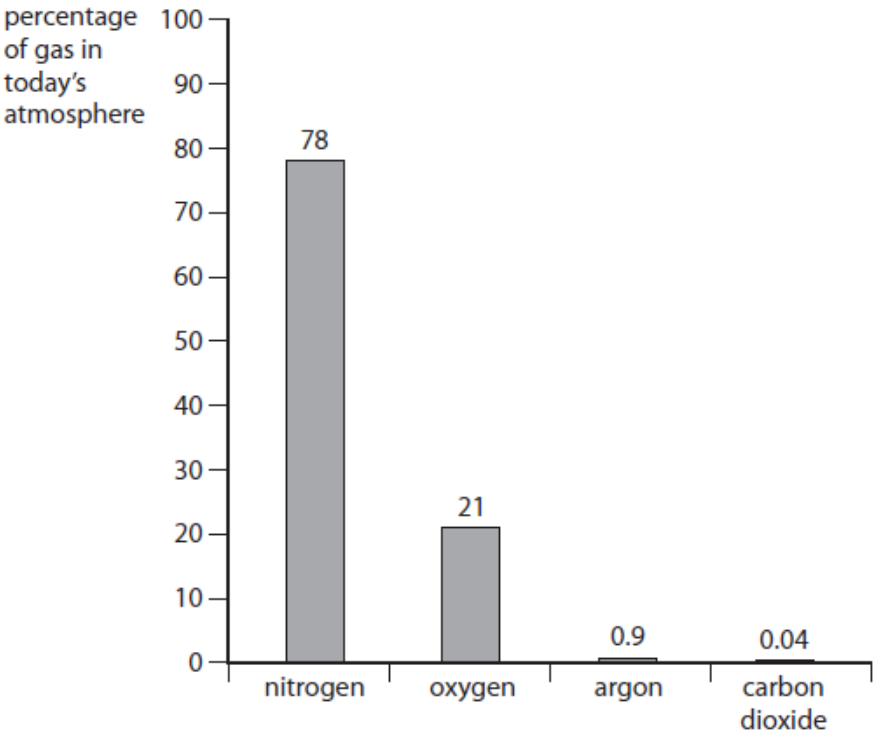


Figure 2

Which of the four gases has decreased by the largest percentage from the Earth's early atmosphere to today's atmosphere?

(1)

☒ **A** argon

☒ **B** carbon dioxide

☒ **C** nitrogen

☒ **D** oxygen

(Total for question = 1 mark)

Q14.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Diesel oil contains alkanes.
These alkanes are part of an homologous series.

Which statement about compounds in this homologous series is true?

(1)

☒ **A** they have the same chemical formula

☒ **B** they have the same empirical formula

☒ **C** they have the same general formula

☒ **D** they have the same molecular formula

(Total for question = 1 mark)

Q15.

* When hydrocarbon fuels burn in a plentiful supply of air they undergo complete combustion, forming carbon dioxide and water vapour.

If the air supply is limited incomplete combustion occurs and carbon monoxide and carbon may be formed.

Describe the problems that can be caused by these products of complete and incomplete combustion.

(6)

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.....

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.....

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.....

.....

.....

.....

.....

Q16.

1 mole of pentadecane can be cracked to form 1 mole of octane, C_8H_{18}, and 1 mole of propene, C_3H_6, and 2 moles of another product.

Complete the balanced equation for this reaction by adding the formula of the missing product.

(1)

$C_{15}H_{32} \rightarrow C_8H_{18} + C_3H_6 + 2$ .....

(Total for question = 1 mark)

Q17.

When fuels such as diesel oil are burned, the high temperatures produced can cause nitrogen and oxygen in the air to form the pollutant nitrogen dioxide.

Complete the balanced equation for the reaction.

(2)

$N_2 + 2O_2 \rightarrow$ .....

(Total for question = 2 marks)

Q18.

When fuels such as diesel oil are burned, the high temperatures produced can cause nitrogen and oxygen in the air to form the pollutant nitrogen dioxide.

Complete the balanced equation for the reaction.

(2)

$N_2 + 2O_2 \rightarrow$ .....

(Total for question = 2 marks)

Q19.

The atmosphere contains 21% of oxygen.

(i) Figure 1 shows an incomplete bar chart of the main gases in the atmosphere.

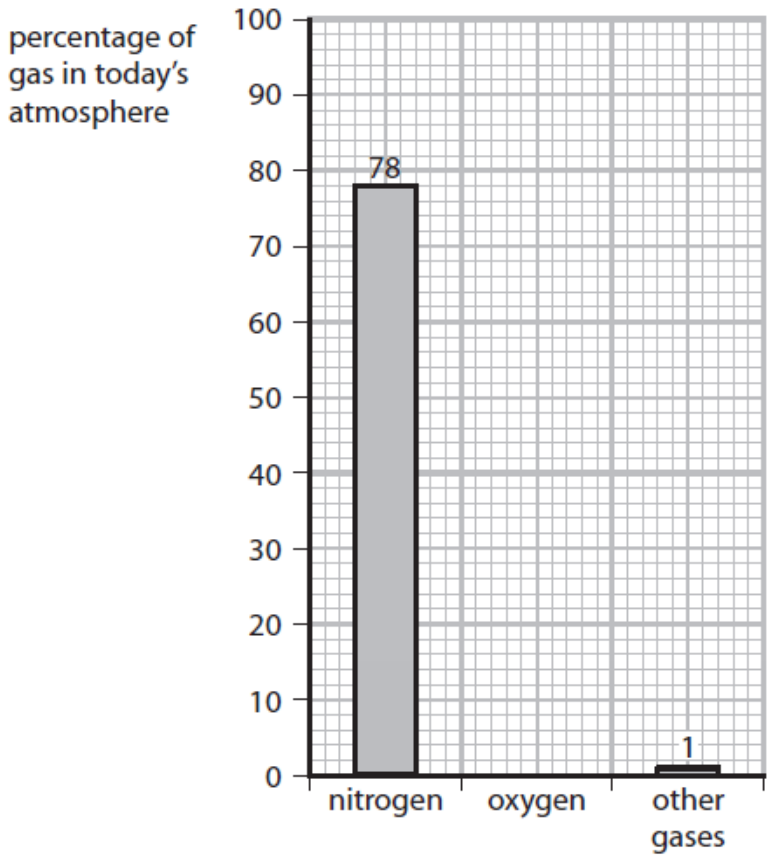


Figure 1

Complete the bar chart by showing the percentage of oxygen in the atmosphere.

(1)

(ii) Calculate the volume of oxygen present in 300 cm^3 of air.

(volumes are measured under the same conditions of temperature and pressure)

(2)

.....

.....

volume of oxygen = ... cm^3

(Total for question = 3 marks)

Q20.

The structure of a molecule of ethene is shown in Figure 8.

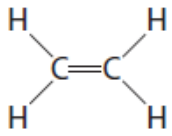


Figure 8

(i) Figure 9 shows the incomplete dot and cross diagram for a molecule of ethene.

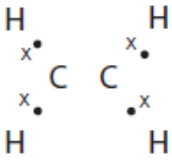


Figure 9

Complete Figure 9 to show the electrons of the C=C double bond.

(1)

(ii) The incomplete combustion of ethene in air produces water as one of the products.

Give the name of another product of the incomplete combustion of ethene.

(1)

.....

(Total for question = 2 marks)

Q21.

Much of the carbon dioxide present in the Earth's early atmosphere dissolved into the oceans.

This led to the formation of compounds including calcium carbonate, $CaCO_3$.

Some of the calcium carbonate reacted with magnesium ions to form dolomite, $CaMg(CO_3)_2$.

Complete the **ionic** equation for the reaction of calcium carbonate with magnesium ions.

(2)

$$\text{.....}CaCO_3 + \text{.....} \rightarrow \underset{\text{dolomite}}{CaMg(CO_3)_2} + Ca^{2+}$$

(Total for question = 2 marks)

Q22.

Methane is a hydrocarbon fuel.

(i) Complete the word equation for the **complete** combustion of methane in oxygen.

(2)

methane + ... → water + ...

(ii) The **incomplete** combustion of methane can produce carbon and carbon monoxide.

Give the reason why carbon and carbon monoxide are produced in the **incomplete** combustion of methane.

(1)

.....

.....

(Total for question = 3 marks)

Q23.

Crude oil is a complex mixture of substances.

When crude oil is separated into fractions, the amount of each fraction obtained rarely matches the demand for that fraction.

Figure 9 shows the relative amounts of six of the fractions present in a crude oil and the relative demand for each of these fractions.

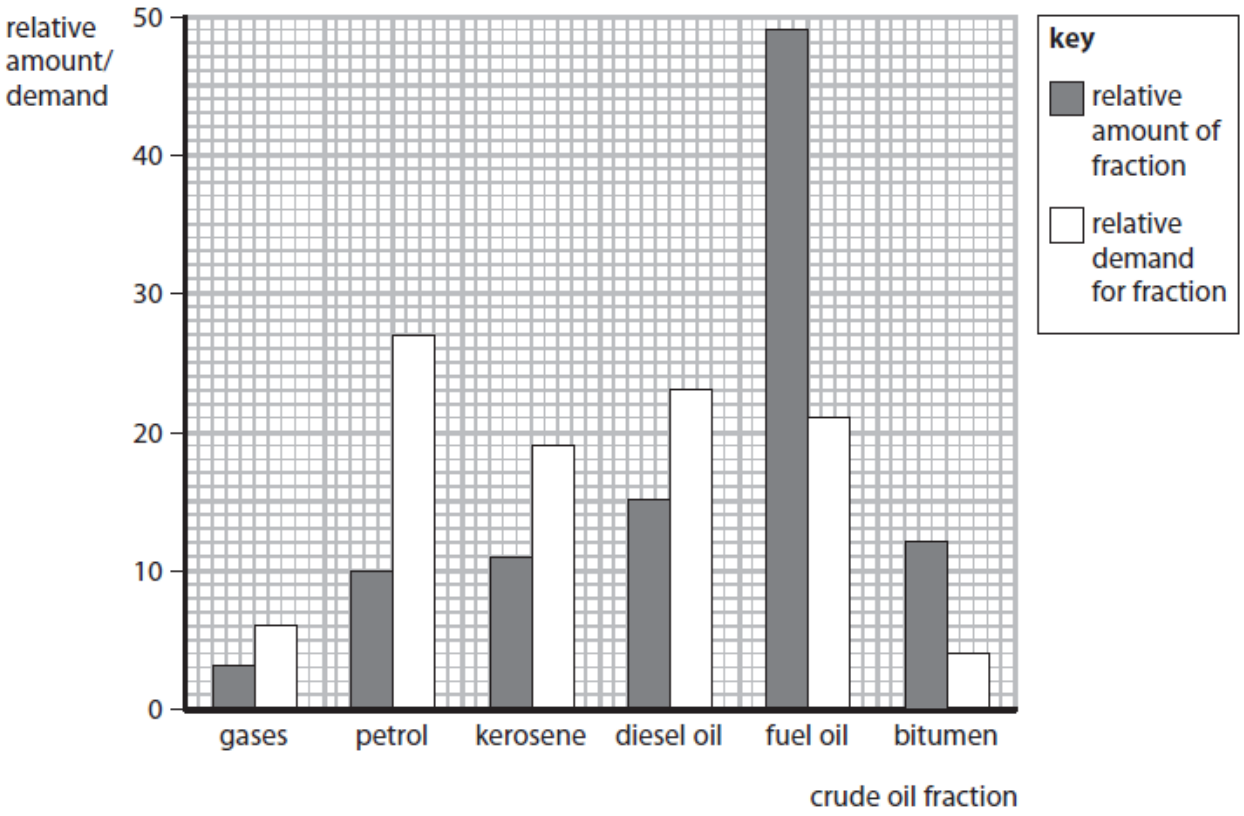


Figure 9

Cracking is used to match the relative amount of a fraction of crude oil to the demand for that fraction.

(i) Use the information in Figure 9 to give the name of the fraction that is most likely to need to be cracked.

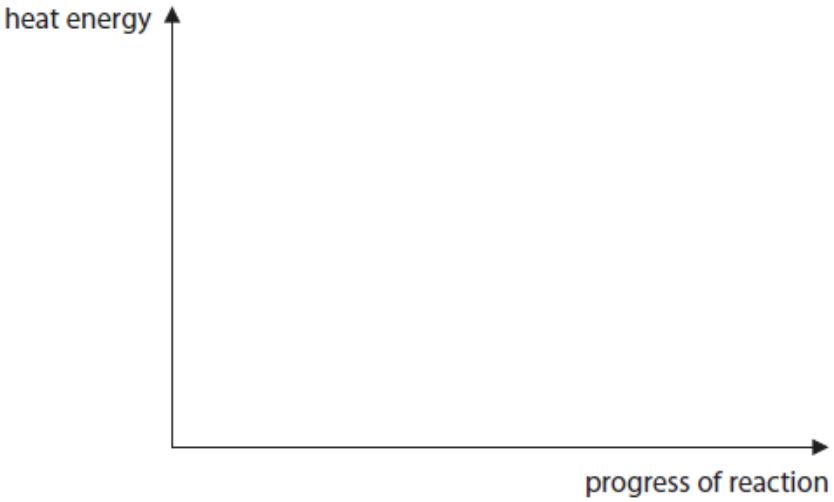
(1)

.....

(ii) In a cracking reaction, reactants are heated to form products.
This reaction is endothermic.

On the axes provided, draw the reaction profile of this reaction.
Label the energy of the reactants, the energy of the products and the activation energy of the reaction.

(3)



(iii) Dodecane, $C_{12}H_{26}$, can be cracked to form useful products.

Complete the equation for the cracking of dodecane by filling in the formula of the single molecule needed to balance the equation.

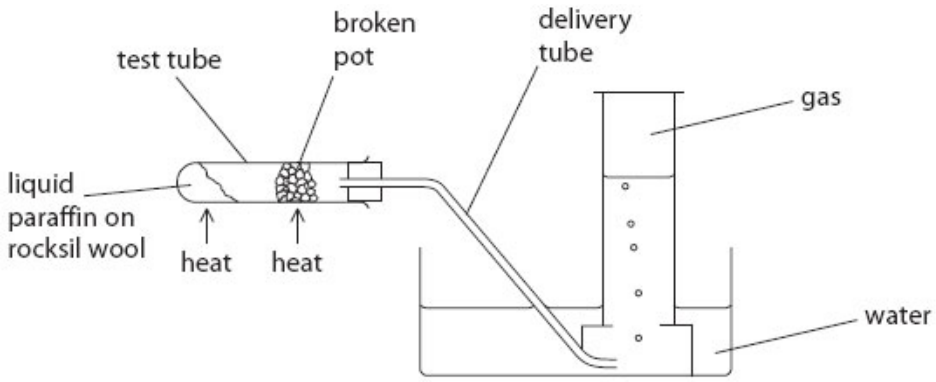
(1)

$$C_{12}H_{26} \rightarrow \text{.....} + 3C_2H_4$$

(Total for question = 5 marks)

Q24.

In the laboratory this apparatus is used to crack long chain hydrocarbon molecules to form shorter chain hydrocarbon molecules.



When the experiment is complete there is a danger that water will rise up the delivery tube into the hot test tube.

State what you would do to prevent this.

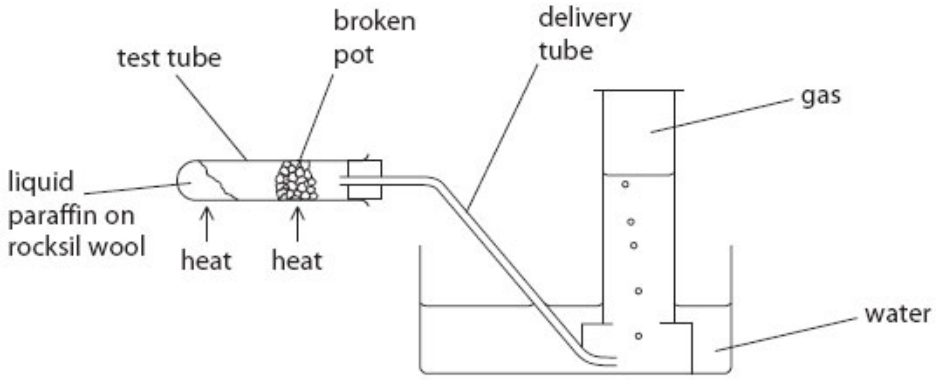
(1)

.....

.....

Q25.

(a) In the laboratory this apparatus is used to crack long chain hydrocarbon molecules to form shorter chain hydrocarbon molecules.



When the experiment is complete there is a danger that water will rise up the delivery tube into the hot test tube.

State what you would do to prevent this.

(1)

.....

.....

(b) Complete the sentence by putting a cross (☒) in the box next to your answer.

The equation for a reaction that occurs during cracking is

$$C_{12}H_{26} \rightarrow C_2H_6 + C_6H_{12} + X$$

In the balanced equation, X is

(1)

☒ **A** C_3H_8

☒ **B** C_4H_8

☒ **C** C_4H_{10}

☒ **D** C_6H_{14}

(c) Alkenes are unsaturated hydrocarbons.

State what is meant by **unsaturated.**

(1)

.....

(d) Propane and propene are bubbled through separate samples of bromine water.

Describe what you would **see** in these tests.

(3)

.....

.....

.....

.....

.....

(e) In industry, long chain hydrocarbon molecules are cracked to form shorter chain hydrocarbon molecules.

Explain why this process is important.

(2)

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.....

.....

(Total for Question = 8 marks)

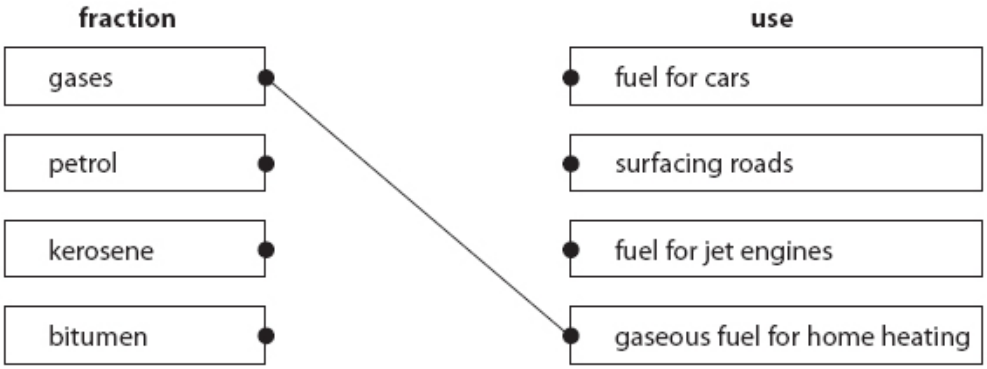
Q26.

The table shows some crude oil fractions and some uses.

Draw one straight line from each fraction to its correct use.

One has been completed for you.

(2)



Q27.

Alkenes can be obtained by cracking some fractions obtained from crude oil.

Explain what is meant by **cracking**.

(2)

.....

.....

.....

Q28.

Crude oil is found in the Earth's crust.

When crude oil is separated into fractions, the amount of each fraction obtained rarely matches the demand for that fraction.

Figure 7 shows the relative amounts of four of the fractions obtained from a crude oil and the relative demand for each of these fractions.

fraction	relative amount obtained from the crude oil	relative demand
gases	5	5
petrol	10	25
kerosene	20	25
fuel oil	45	5

Figure 7

State the fraction for which the relative amount obtained exceeds the relative demand.

(1)

.....

(Total for question = 1 mark)

Q29.

Potassium reacts with oxygen to form potassium oxide.

(i) Describe the test to show that a gas is oxygen.

(2)

.....

.....

.....

.....

(ii) Potassium oxide is ionic.

Write the electronic configurations for the ions in potassium oxide, K_2O.

(2)

potassium ion: .....

oxide ion: .....

(Total for question = 4 marks)

Q30.

Figure 9 shows a sample of hydrogen peroxide solution decomposing to form water and oxygen gas.

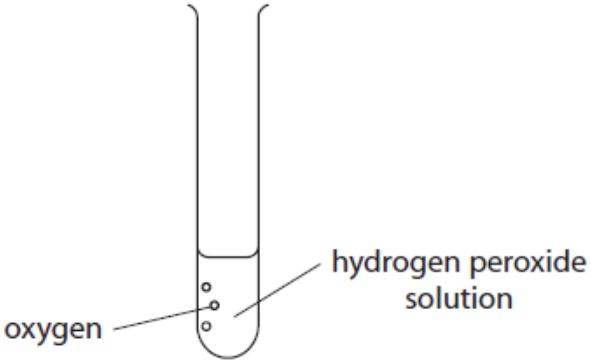


Figure 9

Describe the test to show the gas produced is oxygen.

(2)

.....

.....

.....

(Total for question = 2 marks)

Q31.

Cracking involves the breaking down of large hydrocarbon molecules into smaller hydrocarbon molecules.

(i) Octane, C_8H_{18}, can be cracked to produce one molecule of ethene, C_2H_4, and one molecule of C_xH_{14}.

$$C_8H_{18} \rightarrow C_2H_4 + C_xH_{14}$$

Determine the value of x in the molecule of C_xH_{14}.

(1)

x = ...

(ii) Dodecane is a large hydrocarbon molecule.

When one molecule of dodecane is cracked the products are one molecule of octane and one molecule of butene.

dodecane → octane + butene

Calculate the maximum mass of octane that could be produced when 340 g of dodecane is

cracked in this reaction.

(relative formula masses: dodecane = 170, octane = 114)

(2)

.....

.....

.....

.....

.....

.....

mass of octane = ... g

(Total for question = 3 marks)

Q32.

Figure 6 shows two gas syringes connected by a glass tube.

Inside the glass tube there are some pieces of zinc.
Zinc reacts with oxygen at a temperature of over 225 °C.
Not all the oxygen reacts at once, the oxygen reacts only when in contact with the zinc.

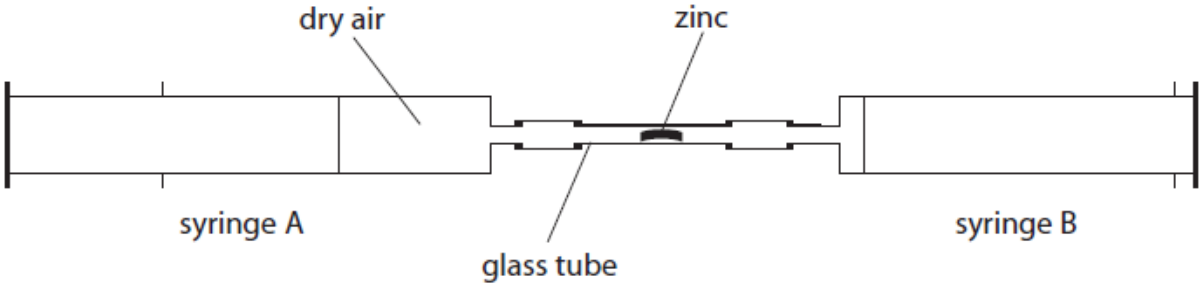


Figure 6

Devise a plan to find the volume of oxygen contained in a known volume of air, using the apparatus shown in Figure 6.

(4)

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.....

(Total for question = 4 marks)

Q33.

*Petrol and diesel are used as fuels for cars.
The emissions from three similar sized cars were investigated.
The first car was the oldest, had no catalytic converter and used petrol.
The other two cars were only a few years old.
One of these was fitted with a catalytic converter and used petrol and the other car used diesel.

Figure 9 shows the emissions in grams for each kilometre travelled by these three cars.

	emissions in g km^{-1}			
	carbon monoxide	nitrogen oxides	carbon dioxide	carbon particulates
car with no catalytic converter using petrol	1.60	0.09	180	0.00
car with catalytic converter using petrol	0.67	0.02	180	0.00
car using diesel	0.05	0.19	130	0.02

Figure 9

Discuss and compare the impact on the environment of the emissions from these three cars using the information from Figure 9.

(6)

(Total for question = 6 marks)

Q34.

(a) Complete the sentence by putting a cross (☒) in the box next to your answer.

The Earth's earliest atmosphere is thought to have been formed by

(1)

☒ **A** animals breathing

☒ **B** photosynthesis in plants

☒ **C** the oceans cooling

☒ **D** gases from volcanoes

(b) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

The Earth's earliest atmosphere contained large amounts of carbon dioxide.

The percentage of carbon dioxide in the Earth's atmosphere today is

(1)

☒ **A** less than 1%

☒ **B** 5%

☒ **C** 21%

☒ **D** 78%

(ii) Write the formula of a molecule of carbon dioxide.

(1)

.....

(iii) The percentage of carbon dioxide in the atmosphere has decreased since the Earth's earliest atmosphere.

Explain what has caused the amount of carbon dioxide in the atmosphere to decrease.

(2)

.....

.....

(iv) State one human activity that increases the amount of carbon dioxide in the atmosphere today.

(1)

.....

(v) Describe the test to show that a gas is carbon dioxide.

(2)

.....

.....

.....

Q35.

The Earth's atmosphere today has changed, when compared with the Earth's earliest atmosphere.

Two processes that caused changes were the cooling of the atmosphere and photosynthesis.

(i) State how cooling changed the composition of the Earth's atmosphere.

(1)

.....

.....

(ii) Explain how photosynthesis changed the composition of the Earth's atmosphere.

(2)

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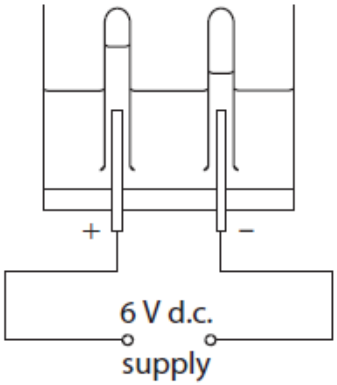
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Q36.

Sodium sulfate solution is electrolysed in the apparatus shown.



Sodium sulfate solution contains sodium ions, Na^+, sulfate ions, SO_4^{2-}, hydrogen ions, H^+, and hydroxide ions, OH^-.

Hydrogen is produced at one electrode and oxygen is produced at the other electrode.

Explain how these products are formed from the ions in the electrolysis process, indicating how you would identify the products.

You may give ionic equations in your answer.

(6)

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Q37.

(a) Ethanol can be produced by reacting ethene with steam.

Write the balanced equation for this reaction.

(2)

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(b) Ethanol can also be produced by fermentation.

Describe how ethanol can be produced from sugar by fermentation.

(2)

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(c) A country has large amounts of available fertile land.
It has no reserves of crude oil.
It is not a wealthy country.

Explain why this country produces the ethanol it needs by fermentation rather than from ethene.

(3)

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(d) An atom of phosphorus contains 15 electrons.

Describe how these 15 electrons are arranged in a phosphorus atom.

(2)

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(c) A country has large amounts of available fertile land.
It has no reserves of crude oil.
It is not a wealthy country.

Explain why this country produces the ethanol it needs by fermentation rather than from ethene.

(3)

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(d) Ethanol is a member of the homologous series of alcohols.
The first three members of the series are

methanol CH_3OH

ethanol C_2H_5OH

propanol C_3H_7OH

Use the formulae of these molecules to explain why these alcohols are members of the same homologous series.

(2)

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(Total for Question = 9 marks)

Q38.

Ethanol

Ethanol is present in alcoholic drinks.

(a) Ethanol is produced by fermentation of carbohydrates.

Complete the sentence by putting a cross (☒) in the box next to your answer.

The conditions used for fermentation are

(1)

☒ **A** add manganese(IV) oxide, temperature below 20°C

☒ **B** add yeast, temperature of about 35°C

☒ **C** add manganese(IV) oxide, temperature of 45°C

☒ **D** add yeast, temperature above 60°C

(b) Ethanol, C_2H_5OH, is also produced by the reaction of ethene with steam.

Write the balanced equation for this reaction.

(2)

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(c) Ethanol is a member of the homologous series, the alcohols.

(i) Describe what is meant by an **homologous series**.

(2)

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(ii) Draw the structure of a molecule of methanol, CH_3OH.

Show all the covalent bonds.

(1)

(d) When a bottle of wine is left open for a few days, ethanol in the wine changes into ethanoic acid.

(i) State the type of reaction that occurs when ethanol changes into ethanoic acid.

(1)

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(ii) Describe what you would **see** when a piece of magnesium ribbon is added to dilute ethanoic acid.

(2)

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(Total for question = 9 marks)

Q39.

* Diesel oil can contain impurities of sulfur.
Burning diesel oil containing impurities of sulfur can result in acid rain.
Acid rain is harmful to the environment.

Explain how acid rain is formed and the harm it can do.

(Total for question = 6 marks)

Q40.

Explain how the greenhouse effect is caused by the gases produced by the complete combustion of diesel oil.

(3)

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(Total for question = 3 marks)

Q41.

Explain how the greenhouse effect is caused by the gases produced by the complete combustion of diesel oil.

(3)

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(Total for question = 3 marks)

Q42.

A student carried out an experiment to prove that candle wax, a hydrocarbon, produces carbon dioxide and water vapour when it burns.

The equipment used is shown in Figure 11.

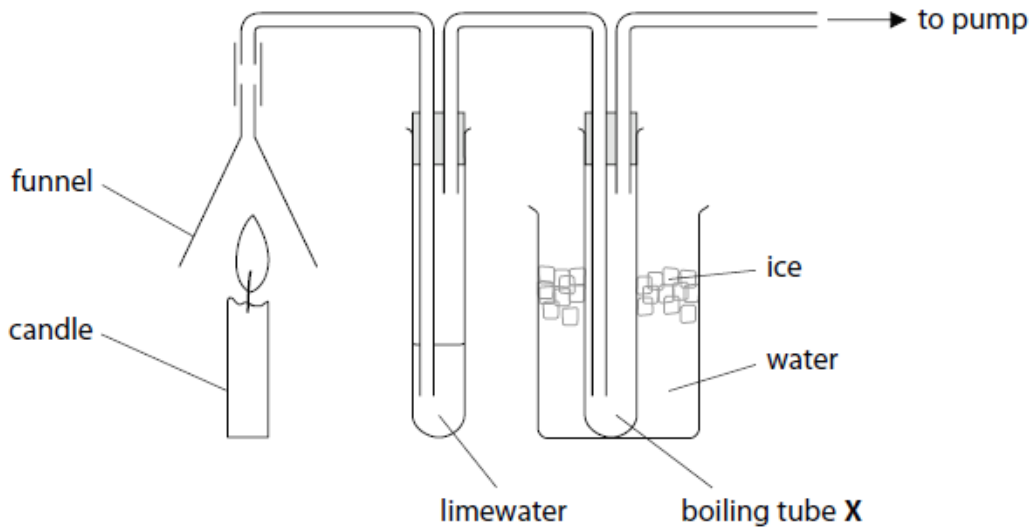


Figure 11

The gas produced from the burning candle is drawn through the apparatus.
The limewater turned milky showing that carbon dioxide had been formed.

A small amount of a colourless liquid condensed in boiling tube **X**.
The student claimed that this proved that burning candle wax produced water.
The teacher said the apparatus had been set up incorrectly and therefore this conclusion about water was not valid.

Explain how the student could modify the equipment to prove that water is produced by burning candle wax.

(2)

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(Total for question = 2 marks)

Q43.

An impure hydrocarbon fuel is burned in the apparatus in Figure 7.

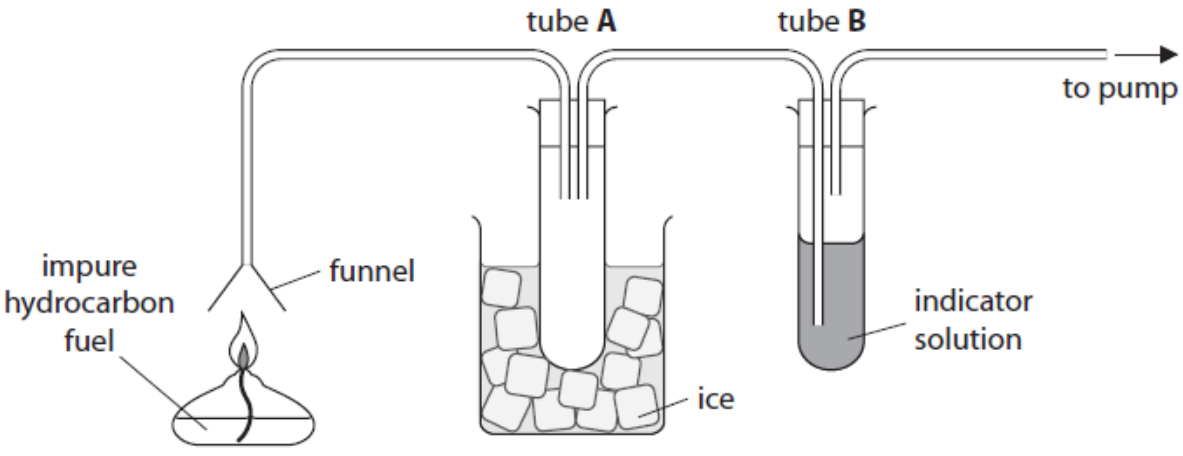


Figure 7

When the fuel is burned

- the funnel becomes hot
- a colourless liquid forms in tube A
- the indicator in tube B changes colour to show an acidic gas.

Explain these observations.

(3)

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(Total for question = 3 marks)

Q44.

This early atmosphere was hot and contained water vapour.
The atmosphere today contains less water vapour.

Explain what caused the amount of water vapour in the atmosphere to decrease.

(2)

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(Total for question = 2 marks)

Q45.

P and **Q** are both mixtures of gases.
One has the same composition as the early atmosphere and the other has the same composition as the current atmosphere.

Tests are carried out on gas mixtures **P** and **Q**.

The test for carbon dioxide is to bubble the gas into limewater; if carbon dioxide is present calcium carbonate is formed.

The results of the tests are shown in Figure 6.

test	result with gas mixture P	result with gas mixture Q
bubble gas into limewater	white precipitate forms after 4 minutes	white precipitate forms after 10 seconds
place burning splint into gas mixture	splint continues to burn	splint immediately goes out

Figure 6

Explain, using the data in Figure 6, which gas mixture represents the early atmosphere.

(2)

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(Total for question = 2 marks)

Q46.

Pentadecane, $C_{15}H_{32}$, is a hydrocarbon and is used as a fuel.

The incomplete combustion of pentadecane produces carbon monoxide.
Carbon monoxide is a toxic gas.

(i) Explain why the incomplete combustion of pentadecane can produce carbon monoxide as one of the products.

(2)

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(ii) Explain how carbon monoxide behaves as a toxic gas.

(2)

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(Total for question = 4 marks)

Q47.

Methane gas, CH_4, was burned using the apparatus shown in Figure 13.

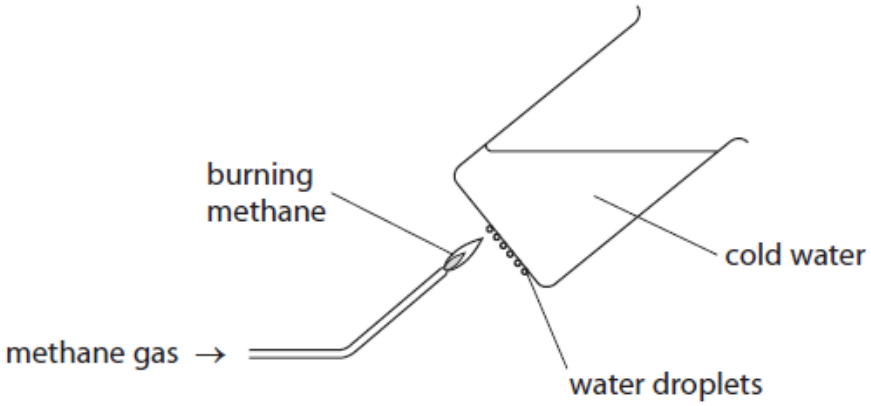


Figure 13

Explain why water droplets form on the bottom of the beaker of cold water.

(2)

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(Total for question = 2 marks)

Q48.

Crude oil is found in the Earth's crust.

Which of the statements about crude oil is correct?

(1)

☒ **A** crude oil is a finite resource

☒ **B** crude oil is a mixture of the elements hydrogen and carbon

☒ **C** all of the molecules in crude oil contain rings of carbon atoms

☒ **D** crude oil is used in cars as a fuel

(Total for question = 1 mark)

Q49.

Figure 8 shows one molecule of each of four different substances, **A**, **B**, **C** and **D**.

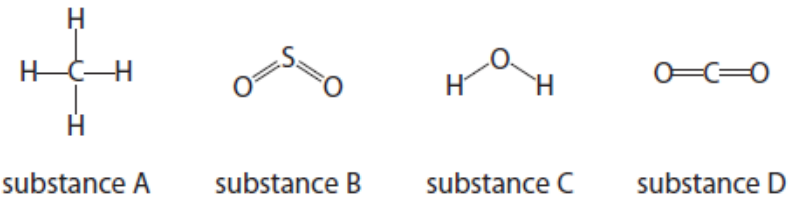


Figure 8

State the formula of a molecule of substance **B**.

(1)

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(Total for question = 1 mark)

Q50.

Which of these is the formula of a molecule of a hydrocarbon?

Put a cross (☒) in the box next to your answer.

(1)

☒ **A** CH_3COOCH_3

☒ **B** CH_3CH_2Cl

☒ **C** CH_3CH_3

☒ **D** CH_3COOH