

Surname					Other Names				
Centre Number					Candidate Number				
Candidate signature									

General Certificate of Secondary Education  
Specimen Paper



**SCIENCE A**  
**Unit 1b Chemistry (Oils, Earth and Atmosphere)**

**CHY1B**

**CHEMISTRY**  
**Unit 1b Chemistry (Oils, Earth and Atmosphere)**

Date and Time

**For this paper you must have:**

- a black ball-point pen
- an objective test answer sheet.

You may use a calculator.

Time allowed: 30 minutes

### Instructions

- Fill in the boxes at the top of this page.
- Check that your name, candidate number and centre number are printed on the separate answer sheet.
- Check that the separate answer sheet has the title ‘Oils, Earth and Atmosphere’ printed on it.
- Attempt **one Tier only**, **either** the Foundation Tier **or** the Higher Tier.
- Make sure that you use the correct side of the separate answer sheet; the Foundation Tier is printed on one side and the Higher Tier on the other.
- Answer **all** the questions for the Tier you are attempting.
- Record your answers on the separate answer sheet only.
- Do all rough work in this book, **not** on your answer sheet.

### Instructions for recording answers

- Use a **black ball-point pen**.
- For each answer **completely fill in the circle** as shown:
 

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
- Do **not** extend beyond the circles.
- If you want to change your answer, **you must** cross out your original answer, as shown:
 

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
- If you change your mind about an answer you have crossed out and now want to choose it, draw a ring around the cross as shown:
 

1	2	3	4
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

### Information

- The maximum mark for this paper is 36.

### Advice

- Do **not** choose more responses than you are asked to. You will lose marks if you do.
- Make sure that you hand in both your answer sheet and this question paper at the end of the test.
- If you start to answer on the wrong side of the answer sheet by mistake, make sure that you cross out **completely** the work that is not to be marked

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You must do **one Tier** only, **either** the Foundation tier **or** the Higher Tier.  
The Higher Tier starts on page 14 of this booklet.

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## FOUNDATION TIER

### SECTION ONE

Questions **ONE** to **SIX**.

In these questions, match the letters, **A**, **B**, **C** and **D**, with the numbers **1 – 4**.

Use **each** answer only **once**.

Mark your choices on the answer sheet.

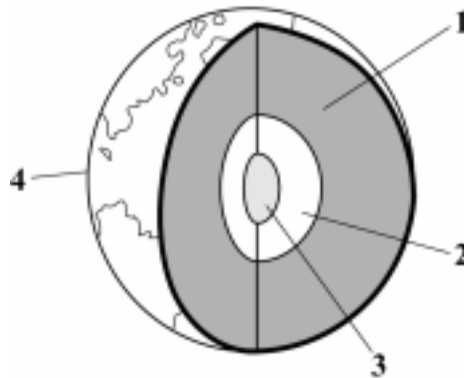
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### QUESTION ONE

The drawing shows the layered structure of the Earth.

Match words, **A**, **B**, **C** and **D**, with the labels **1 – 4** on the diagram.

- A** crust
- B** inner core
- C** mantle
- D** outer core

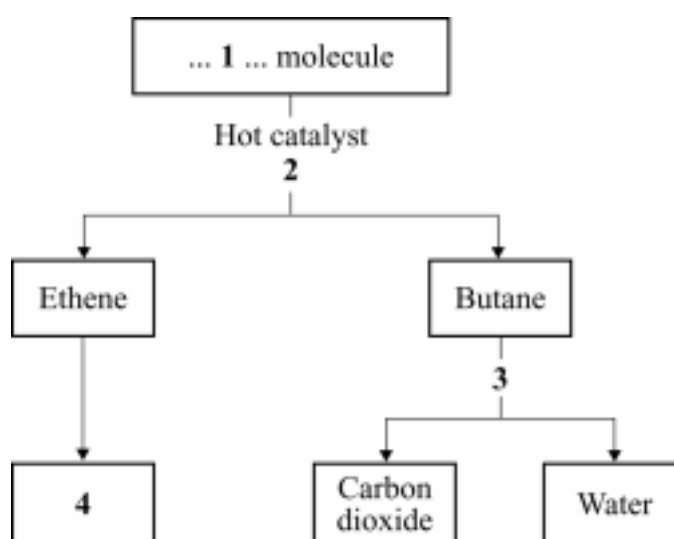


**QUESTION TWO**

The flow diagram shows the reactions of some molecules from crude oil.

Match words, **A**, **B**, **C**, and **D**, with the labels **1 – 4** on the diagram.

- A** burning
- B** cracking
- C** hydrocarbon
- D** poly(ethene)



**Turn over for the next question**

**QUESTION THREE**

Plant oils have many uses.

Match words, **A**, **B**, **C** and **D**, with the numbers **1 – 4** in the sentences.

- A** a fuel
- B** an emulsion
- C** energy
- D** temperature

Vegetable oil can be burned as . . . **1** . . . .

Vegetable oils are useful foods because they contain a lot of . . . **2** . . . .

Vegetable oils cook food at a higher . . . **3** . . . than water.

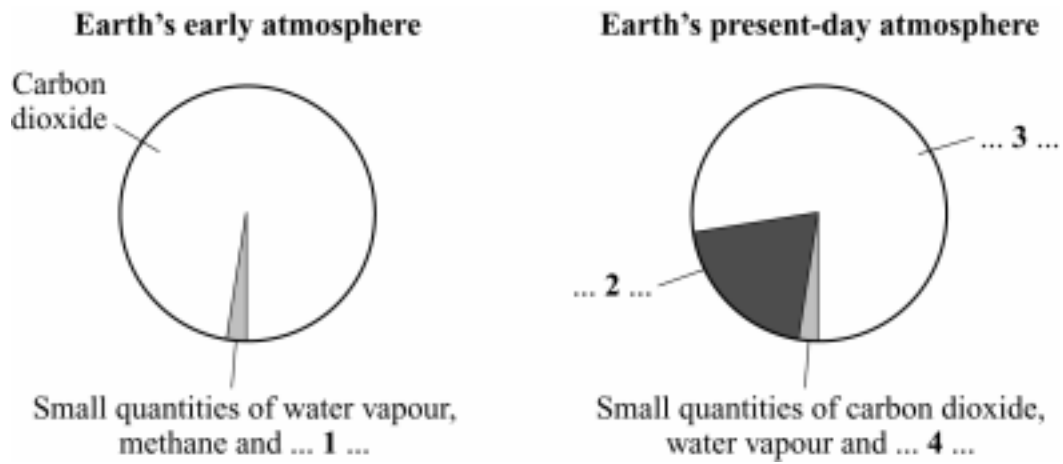
In some foods, vegetable oil is mixed with another liquid to form . . . **4** . . . .

**QUESTION FOUR**

The pie charts show the gases in the Earth's early atmosphere and the Earth's present-day atmosphere.

Match words, **A**, **B**, **C** and **D**, with the labels **1 – 4** on the diagram.

- A** ammonia
- B** nitrogen
- C** noble gases
- D** oxygen



**Turn over for the next question**

**QUESTION FIVE**

This question is about tectonic plates.

Match words, **A**, **B**, **C** and **D**, with the numbers **1 – 4** in the sentences.

- A** continental drift
- B** convection currents
- C** radioactive processes
- D** volcanic eruptions

Wegener suggested that in the past there was a single, large landmass.

This split up and the smaller landmasses moved apart. We call this process . . . **1** . . . .

Tectonic plates move because of . . . **2** . . . in the Earth's mantle.

The heat required for this movement to occur comes from natural . . . **3** . . . .

At the boundaries between the tectonic plates, there are often . . . **4** . . . .

**QUESTION SIX**

The table gives some information about four different vegetable oils.

Iodine number is the number of unsaturated bonds in a molecule of the oil.

Cetane number is a measure of how easy it is to ignite the oil.

Oils with low cetane numbers do not ignite easily.

Match words, **A**, **B**, **C** and **D**, with the numbers **1** – **4** in the table.

- A** the oil which is solid at room temperature
- B** the oil which would be the hardest to ignite
- C** the oil with the least double bonds
- D** the oil with the lowest melting point

	<b>Name of oil</b>	<b>Melting point in °C</b>	<b>Iodine number</b>	<b>Cetane number</b>
<b>1</b>	Olive oil	–12	60	52
<b>2</b>	Palm oil	35	63	65
<b>3</b>	Rapeseed oil	5	100	45
<b>4</b>	Sunflower oil	–18	130	60

**Turn over for the next question**

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**SECTION TWO**Questions **SEVEN** to **NINE**.

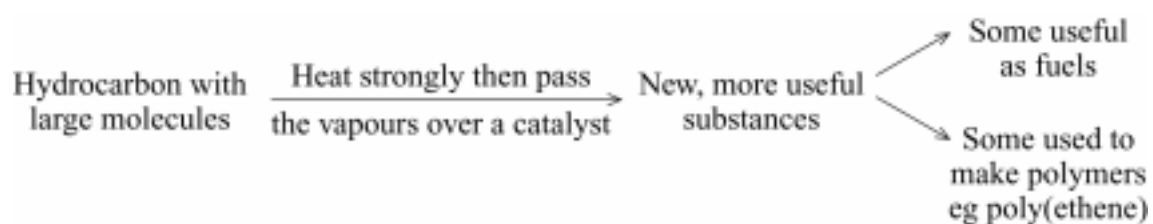
Each of these questions has four parts.

In each part choose only **one** answer.Mark your choices on the answer sheet.

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**QUESTION SEVEN**

Hydrocarbons with large molecules can be broken down into more useful substances.

**7A** What name is given to this process in which large hydrocarbon molecules are broken down?

- 1 cracking
- 2 evaluation
- 3 oxidation
- 4 polymerisation

**7B** One use of poly(ethene) is to make . . .

- 1 crates.
- 2 pans.
- 3 plastic bags.
- 4 ropes.



**7C** Burying waste poly(ethene) is not a good way to get rid of it.

This is because . . .

- 1 it does not flow easily.
- 2 it has a high boiling point.
- 3 it is insoluble in water.
- 4 it is not biodegradable.

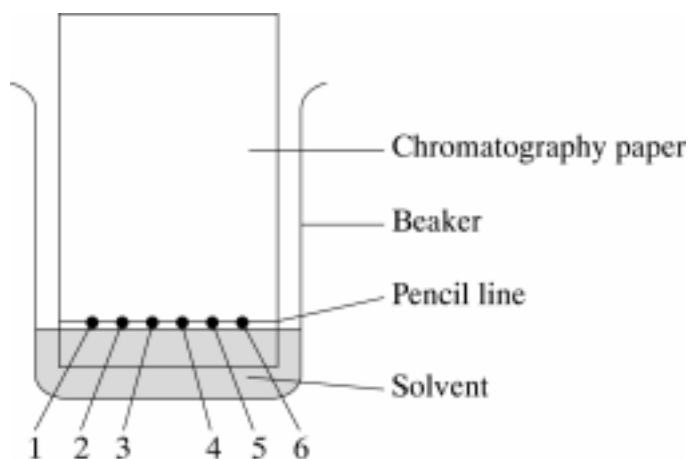
**7D** When cardboard and paper waste are buried in the ground, they . . .

- 1 are broken down by microorganisms.
- 2 are dissolved by soil water.
- 3 ignite spontaneously.
- 4 release sulfur dioxide gas.

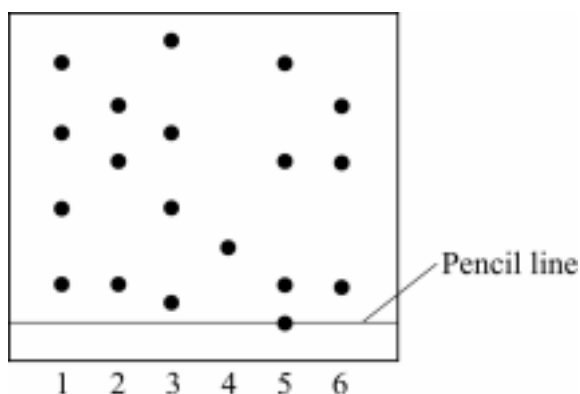
**Turn over for the next question**

**QUESTION EIGHT**

Jane used chromatography to investigate the colours used in six different sweets, 1 – 6. A pencil line was drawn near the bottom of the chromatography paper. Jane placed a few drops of extract from each of the foods on this line. The paper was then dipped into some solvent in a beaker.



The diagram below shows the chromatogram obtained at the end of the experiment.



**8A** Which two sweets probably contained the same mixture of dyes?

- 1 1 and 3
- 2 1 and 5
- 3 2 and 6
- 4 3 and 5

**8B** What is the best conclusion that Jane could draw about sweet 5?

- 1 sweet 5 contains four dyes
- 2 sweet 5 probably contains four dyes
- 3 sweet 5 contains at least four dyes
- 4 sweet 5 contains a maximum of four dyes

**8C** Which of the following would give the most accurate measure of the distance moved by a dye?

- 1 a metre rule
- 2 a micrometer
- 3 a pair of dividers and a millimetre rule
- 4 a piece of 2 mm graph paper

**8D** What is the best way of doing a survey to find which children's drinks on sale in the UK contain a particular dye?

- 1 ask mothers at a local toddler group
- 2 do an internet search
- 3 look on the shelves in the local supermarket
- 4 write to as many food manufacturers as you can find in yellow pages

**Turn over for the next question**

**QUESTION NINE**

Read the passage below about cooking with oils.

Cooking at high temperatures can damage oils. The more omega 3 fatty acids in the oil, the less suitable it is for cooking. The heat not only damages the fatty acids, but it can also change them into harmful substances. Hydrogenated oils are often used for cooking. Since these oils have already been “damaged” by chemical processing, they are less likely to be further damaged by heat. The oils that are higher in saturated fats are the most stable when heated. These include peanut oil and olive oil. The more fragile oils are best used at room temperature, like salad dressings.

To preserve the nutritious properties and the flavour of unrefined oils, try the “wet-sauté”. Pour around one-fourth of a cup of water in the stir-fry pan and heat just below boiling. Then add the food and cook it a little before adding the oil. Wet-sauté shortens the time oil is in contact with a hot pan. Stir frequently to further reduce the time the oil is in contact with the hot metal. Never heat oils to the smoking point, as this not only damages their fatty acid content but also their taste.

**9A Heating oils to smoking point . . .**

- 1 damages their fatty acid content.
- 2 is best for cooking chips.
- 3 is best for making salad oil.
- 4 turns them into margarine.

**9B Wet-sauté . . .**

- 1 damages oils.
- 2 is best for cooking chips.
- 3 is best for saturated oils.
- 4 is best for unsaturated oils.

**9C** A hydrogenated oil . . .

- 1 contains hydrogen.
- 2 contains only carbon.
- 3 has a better taste.
- 4 is saturated.

**9D** Hydrogenated oils have been ‘damaged’ by chemical processing.

In this processing, . . .

- 1 unsaturated oils are frozen to make them solid.
- 2 unsaturated oils are gently heated with hydrogen in the presence of a catalyst.
- 3 unsaturated oils are heated to a high temperature.
- 4 vapour from unsaturated oils is passed over a hot catalyst.

**END OF TEST**

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You must do **one Tier** only, **either** the Foundation tier **or** the Higher Tier.  
The Foundation Tier is earlier in this booklet.

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**HIGHER TIER****SECTION ONE**Questions **ONE** and **TWO**.In these questions, match the letters, **A**, **B**, **C** and **D**, with the numbers **1 – 4**.Use **each** answer only **once**.

Mark your choices on the answer sheet.

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**QUESTION ONE**

The table gives some information about four different vegetable oils.  
Iodine number is the number of unsaturated bonds in a molecule of the oil.  
Cetane number is a measure of how easy it is to ignite the oil.  
Oils with low cetane numbers do not ignite easily.

Match words, **A**, **B**, **C** and **D**, with the numbers **1 – 4** in the table.

- A** the oil which is solid at room temperature
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- C** the oil with the least double bonds
- D** the oil with the lowest melting point

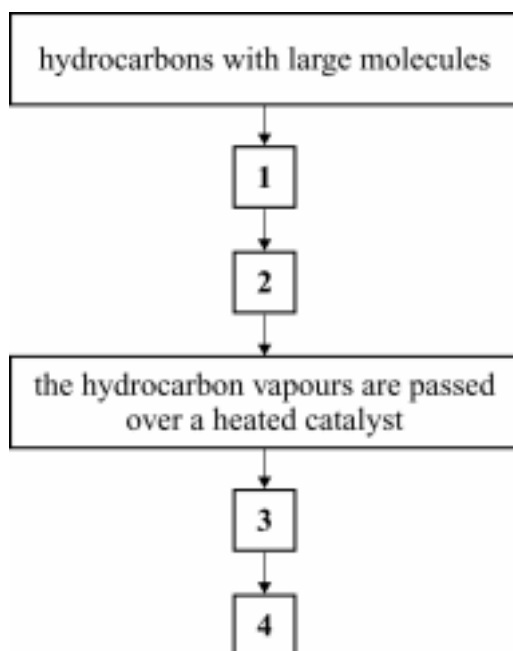
	Name of oil	Melting point in °C	Iodine number	Cetane number
<b>1</b>	Olive oil	-12	60	52
<b>2</b>	Palm oil	35	63	65
<b>3</b>	Rapeseed oil	5	100	45
<b>4</b>	Sunflower oil	-18	130	60

**QUESTION TWO**

The diagram shows stages in the cracking of hydrocarbons.

Match words, **A**, **B**, **C**, and **D**, with the numbers **1** – **4** in the flow chart, to describe what happens in this process.

- A** hydrocarbons with small molecules
- B** the hydrocarbons are heated
- C** the hydrocarbons are in a vapour state
- D** thermal decomposition of hydrocarbons



**Turn over for the next question**

**SECTION TWO**Questions **THREE** to **NINE**.

Each of these questions has four parts.

In each part choose only **one** answer.

Mark your choices on the answer sheet.

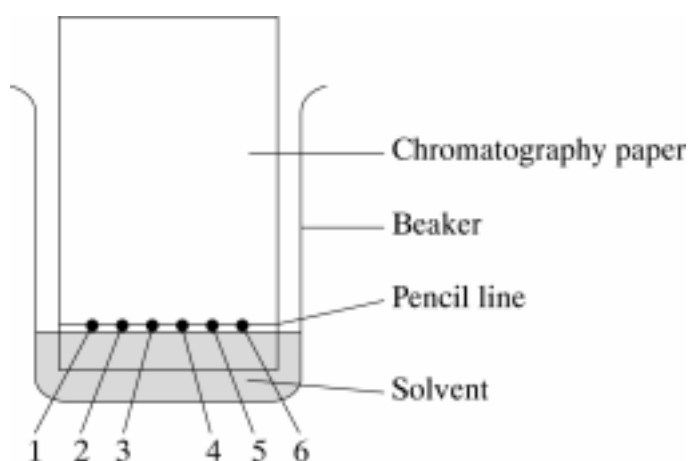
**QUESTION THREE**

Jane used a chromatography to investigate the colours used in six different sweets, 1 – 6.

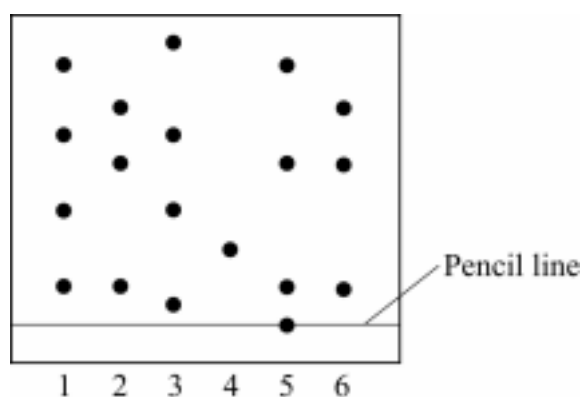
A pencil line was drawn near the bottom of the chromatography paper.

Jane placed a few drops of extract from each of the foods on this line.

The paper was then dipped into some solvent in a beaker.



The diagram below shows the chromatogram obtained at the end of the experiment.





**3A** Which two sweets probably contained the same mixture of dyes?

- 1 1 and 3
- 2 1 and 5
- 3 2 and 6
- 4 3 and 5

**3B** What is the best conclusion that Jane could draw about sweet 5?

- 1 sweet 5 contains four dyes.
- 2 sweet 5 probably contains four dyes.
- 3 sweet 5 contains at least four dyes.
- 4 sweet 5 contains a maximum of four dyes.

**3C** Which of the following would give the most accurate measure of the distance moved by a dye?

- 1 a metre rule
- 2 a micrometer
- 3 a pair of dividers and a millimetre rule
- 4 a piece of 2 mm graph paper

**3D** What is the best way of doing a survey to find which children's drinks on sale in the UK contain a particular dye?

- 1 ask mothers at a local toddler group
- 2 do an internet search
- 3 look on the shelves in the local supermarket
- 4 write to as many food manufacturers as you can find in yellow pages

**QUESTION FOUR**

Read the passage below about cooking with oils.

Cooking at high temperatures can damage oils. The more omega 3 fatty acids in the oil, the less suitable it is for cooking. The heat not only damages the fatty acids, but it can also change them into harmful substances. Hydrogenated oils are often used for cooking. Since these oils have already been “damaged” by chemical processing, they are less likely to be further damaged by heat. The oils that are higher in saturated fats are the most stable when heated. These include peanut oil and olive oil. The more fragile oils are best used at room temperature, like salad dressings.

To preserve the nutritious properties and the flavour of unrefined oils, try the “wet-sauté”. Pour around one-fourth of a cup of water in the stir-fry pan and heat just below boiling. Then add the food and cook it a little before adding the oil. Wet-sauté shortens the time oil is in contact with a hot pan. Stir frequently to further reduce the time the oil is in contact with the hot metal. Never heat oils to the smoking point, as this not only damages their fatty acid content but also their taste.

**4A Heating oils to smoking point . . .**

- 1 damages their fatty acid content.
- 2 is best for cooking chips.
- 3 is best for making salad oil.
- 4 turns them into margarine.

**4B Wet-sauté . . .**

- 1 damages oils.
- 2 is best for cooking chips.
- 3 is best for saturated oils.
- 4 is best for unsaturated oils.

4C A hydrogenated oil . . .

- 1 contains hydrogen.
- 2 contains only carbon.
- 3 has a better taste.
- 4 is saturated.

4D Hydrogenated oils have been ‘damaged’ by chemical processing.

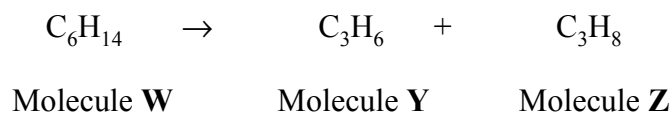
In this processing, . . .

- 1 unsaturated oils are frozen to make them solid.
- 2 unsaturated oils are gently heated with hydrogen in the presence of a catalyst.
- 3 unsaturated oils are heated to a high temperature.
- 4 vapour from unsaturated oils is passed over a hot catalyst.

**Turn over for the next question**

**QUESTION FIVE**

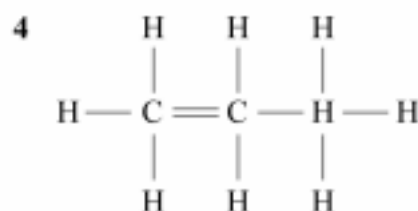
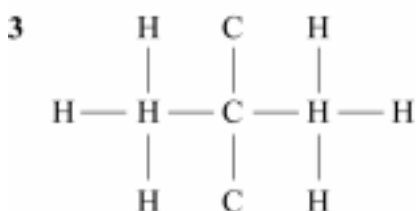
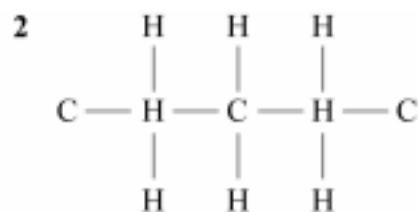
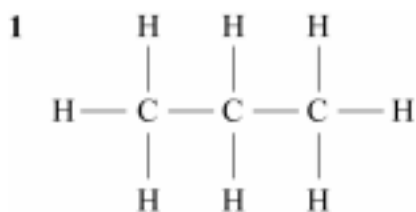
A molecule of a hydrocarbon, formula  $C_6H_{14}$ , can be cracked to produce two different hydrocarbons with smaller molecules.



**5A** The large hydrocarbon molecule can be cracked by . . .

- 1 distillation
- 2 polymerisation.
- 3 thermal decomposition.
- 4 vaporisation.

**5B** The structural formula for molecule **Z** is . . .



**5C** Which of the three molecules, **W**, **Y** and **Z**, have double bonds?

- 1** Molecules **W** and **Y**
- 2** Molecules **W** and **Z**
- 3** Molecule **W** only
- 4** Molecule **Y** only

**5D** What types of hydrocarbons are molecules **Y** and **Z**?

	<b>Molecule Y</b>	<b>Molecule Z</b>
<b>1</b>	saturated	saturated
<b>2</b>	saturated	unsaturated
<b>3</b>	unsaturated	saturated
<b>4</b>	unsaturated	unsaturated

**Turn over for the next question**

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**QUESTION SIX**

Carbon is an essential part of all living things and it is often circulated in nature in carbon dioxide.

**6A** Carbon dioxide is removed from the atmosphere when it dissolves in sea water to form soluble . . .

- 1 calcium carbonate.
- 2 calcium hydrogencarbonate.
- 3 carbohydrates.
- 4 hydrocarbons.

**6B** The amount of carbon dioxide in the atmosphere is also reduced by . . .

- 1 the activity of plants.
- 2 the destruction of forests.
- 3 the eruptions of volcanoes.
- 4 the weathering of limestone.

**6C** Carbon dioxide is released into the atmosphere from volcanoes following the decomposition of . . .

- 1 carbonate rocks.
- 2 igneous rocks.
- 3 metamorphic rocks.
- 4 sandstone rocks.

**6D** Recently, the balance between the amount of carbon dioxide released into the atmosphere and the amount used up has been disturbed.

This is mainly because of . . .

- 1 burning of increased amounts of fossil fuels.
- 2 increased volcanic activity.
- 3 planting of large areas of forests.
- 4 the operation of more nuclear power stations.

**Turn over for the next question**

**QUESTION SEVEN**

The diagram shows the present positions of South America and Africa.  
The position of the boundary between the tectonic plates on which they lie is also drawn.



- 7A** The patterns of rocks on the east coast of South America and the west coast of Africa are very similar.

This suggests that . . .

- 1 Africa and South America have been moving slowly towards each other.
- 2 Africa and South America were once together and have been moving slowly away from each other.
- 3 Africa has been slowly sliding beneath South America.
- 4 South America has been slowly sliding beneath Africa.

- 7B** Tectonic plates are constantly moving.

This movement is caused by . . .

- 1 convection currents.
- 2 the Earth's crust shrinking.
- 3 the gravitational attraction of the Sun.
- 4 the rotation of the Earth.



**7C** The interior of the Earth remains hot because of . . .

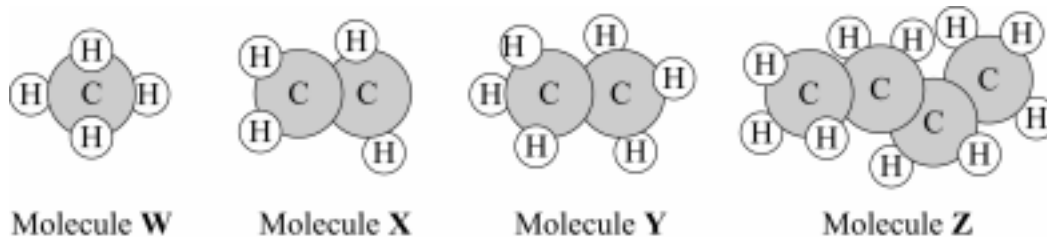
- 1 earthquakes.
- 2 friction between the core and the mantle.
- 3 friction between the moving plates.
- 4 natural radioactive processes.

**7D** The plates move with relative speeds of . . .

- 1 a few centimetres a day.
- 2 a few centimetres a week.
- 3 a few centimetres a month.
- 4 a few centimetres a year.

**QUESTION EIGHT**

The drawings represent four different hydrocarbon molecules.



**8A** Which molecule is unsaturated?

- 1 Molecule **W**
- 2 Molecule **X**
- 3 Molecule **Y**
- 4 Molecule **Z**

**8B** Which of the following belong to the alkane family?

- 1 Molecules **X** and **Y**
- 2 Molecule **W** only
- 3 Molecules **W**, **X** and **Z**
- 4 Molecules **W**, **Y** and **Z**

**8C** Molecules of **X** can be joined together to form a polymer.

What is the name of the polymer?

- 1 poly(ethene)
- 2 poly(vinyl chloride)
- 3 poly(propene)
- 4 poly(styrene)

**8D** Molecules can also be represented by chemical formulae.

For example, molecule **W** has one carbon atom and four hydrogen atoms and is represented by the formula  $\text{CH}_4$

The chemical formula for molecule **Z** is. . .

- 1  $\text{C}_4\text{H}_8$
- 2  $\text{C}_{10}\text{H}_4$
- 3  $\text{C}_4\text{H}_{10}$
- 4  $\text{C}_4\text{H}_{12}$

**Turn over for the next question**

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**QUESTION NINE**

Scientists used to believe that the Earth was cooling. The shrinking core was making the crust wrinkle.

In 1915, Alfred Wegener suggested that all the continents had once been joined together. Later, they had split up and the separate pieces had moved apart.

Few people believed Wegener's theory. Later, new evidence suggested that the crust was divided into plates which could move slowly. This gave support to Wegener's theory.

**9A** How did scientists, who supported the idea that the Earth was cooling, explain the formation of mountains?

- 1 Mountains rose up from the sea bed.
- 2 Mountains were formed by volcanoes.
- 3 The high points of wrinkles formed the mountains.
- 4 The less dense rocks rose above those that were more dense.

**9B** What name was given to Wegner's theory of crustal movement?

- 1 continental drift
- 2 continental shrinking
- 3 mountain building
- 4 subduction

**9C** Scientists now believe that mountain ranges are formed . . .

- 1 by earthquakes.
- 2 by large-scale movements of the Earth's crust.
- 3 by magma rising from the sea floor.
- 4 by material from the fluid mantle being forced above the crust.

**9D** New mountain ranges replace older mountain ranges which . . .

- 1 are destroyed by earthquakes.
- 2 are destroyed when tectonic plates come together.
- 3 are worn down by weathering and erosion.
- 4 sink back into the mantle.

**END OF TEST**

# FOUNDATION TIER

Instructions on how to complete this answer sheet are given on the question paper. Please make sure you follow them carefully.

## QUESTION ONE

	1	2	3	4
A crust	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B inner core	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C mantle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D outer core	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION TWO

	1	2	3	4
A burning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B cracking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C hydrocarbon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D poly(ethene)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION THREE

	1	2	3	4
A a fuel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B an emulsion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION FOUR

	1	2	3	4
A ammonia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B nitrogen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C noble gases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D oxygen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION FIVE

	1	2	3	4
A continental drift	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B convection currents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C radioactive processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D volcanic eruptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION SIX

	1	2	3	4
A the oil which is solid at room temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B the oil which would be the hardest to ignite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C the oil with the least double bonds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D the oil with the lowest melting point	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION SEVEN

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION EIGHT

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## QUESTION NINE

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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# Unit : CHY1B – Chemistry 1b

Date/Series :

Centre :

Candidate Number :

UCI :

Candidate Name :

For completion by the Examination Invigilator. Please fill this oval if the candidate is absent:

## HIGHER TIER

Instructions on how to complete this answer sheet are given on the question paper. Please make sure you follow them carefully.

### QUESTION ONE

	1	2	3	4
A the oil which is solid at room temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B the oil which would be the hardest to ignite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C the oil with the least double bonds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D the oil with the lowest melting point	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION TWO

	1	2	3	4
A hydrocarbons with small molecules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B the hydrocarbons are heated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C the hydrocarbons are in a vapour state	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D thermal decomposition of hydrocarbons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION THREE

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION FOUR

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION FIVE

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION SIX

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION SEVEN

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION EIGHT

	1	2	3	4
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### QUESTION NINE

A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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**GCSE**  
**SCIENCE A (4461)/CHEMISTRY (4421)**  
Objective Test Answer Key  
**CHY1B (Oils, Earth and Atmosphere)**  
**Specimen paper**  
Foundation Tier

Question	Key			
One	<b>A</b>	crust	<b>4</b>	
	<b>B</b>	inner core	<b>3</b>	
	<b>C</b>	mantle	<b>1</b>	
	<b>D</b>	outer core	<b>2</b>	
Two	<b>A</b>	burning	<b>3</b>	
	<b>B</b>	cracking	<b>2</b>	
	<b>C</b>	hydrocarbon	<b>1</b>	
	<b>D</b>	poly(ethene)	<b>4</b>	
Three	<b>A</b>	a fuel	<b>1</b>	
	<b>B</b>	an emulsion	<b>4</b>	
	<b>C</b>	energy	<b>2</b>	
	<b>D</b>	temperature	<b>3</b>	
Four	<b>A</b>	ammonia	<b>1</b>	
	<b>B</b>	nitrogen	<b>3</b>	
	<b>C</b>	noble gases	<b>4</b>	
	<b>D</b>	oxygen	<b>2</b>	
Five	<b>A</b>	continental drift	<b>1</b>	
	<b>B</b>	convection currents	<b>2</b>	
	<b>C</b>	radioactive processes	<b>3</b>	
	<b>D</b>	volcanic eruptions	<b>4</b>	
Six	<b>A</b>	the oil which is solid at room temperature	<b>2</b>	
	<b>B</b>	the oil which would be the hardest to ignite	<b>3</b>	
	<b>C</b>	the oil with the least double bonds	<b>1</b>	
	<b>D</b>	the oil with the lowest melting point	<b>4</b>	
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Seven	<b>1</b>	<b>3</b>	<b>4</b>	<b>1</b>
Eight	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>
Nine	<b>1</b>	<b>4</b>	<b>4</b>	<b>2</b>



**GCSE**  
**SCIENCE A (4461)/CHEMISTRY (4421)**  
 Objective Test Answer Key  
**CHY1B (Oils, Earth and Atmosphere)**  
**Specimen paper**  
 Higher Tier

Question	Key			
One	<b>A</b>	the oil which is solid at room temperature	<b>2</b>	
	<b>B</b>	the oil which would be the hardest to ignite	<b>3</b>	
	<b>C</b>	the oil with the least double bonds	<b>1</b>	
	<b>D</b>	the oil with the lowest melting point	<b>4</b>	
Two	<b>A</b>	hydrocarbons with small molecules	<b>4</b>	
	<b>B</b>	the hydrocarbons are heated	<b>1</b>	
	<b>C</b>	the hydrocarbons are in a vapour state	<b>2</b>	
	<b>D</b>	thermal decomposition of hydrocarbons	<b>3</b>	
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Three	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>
Four	<b>1</b>	<b>4</b>	<b>4</b>	<b>2</b>
Five	<b>3</b>	<b>1</b>	<b>4</b>	<b>3</b>
Six	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>
Seven	<b>2</b>	<b>1</b>	<b>4</b>	<b>4</b>
Eight	<b>2</b>	<b>4</b>	<b>1</b>	<b>3</b>
Nine	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>