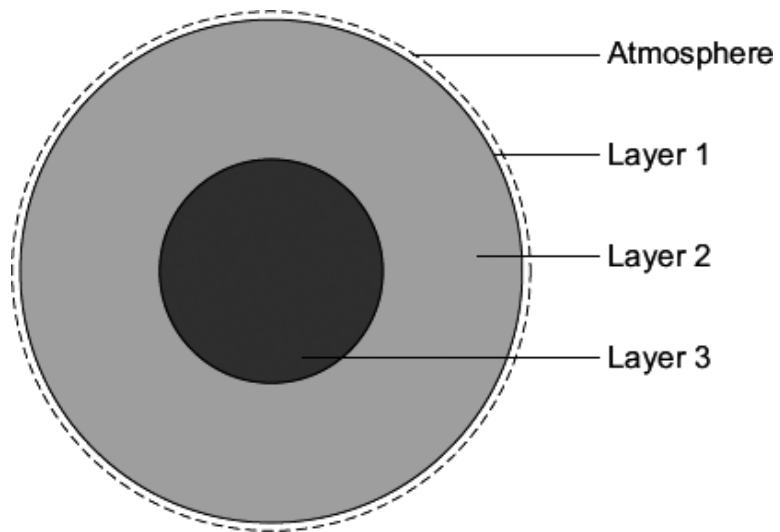


**Q1.** The Earth is made up of several layers.



(a) Draw **one** straight line from each layer to its correct name.

Layer 1	core
Layer 2	crust
Layer 3	mantle
	nucleus

(3)

(b) The table shows the main gases in the Earth's atmosphere.

<b>Gas</b>	<b>Percentage (%) in the atmosphere</b>
Nitrogen	78.0
Oxygen	21.0
Argon	
Carbon dioxide	0.03

Use information in the table to help you to complete the sentences.

(i) Draw a ring around the correct answer to complete the sentence.

The percentage of argon in the Earth's atmosphere is

- |      |
|------|
| 0.97 |
| 9.7  |
| 97.0 |

%.

(1)

(ii) Complete the sentence.

The gas in the Earth's atmosphere that

is a compound is .....

(1)

(Total 5 marks)

**Q2.** In 1980 Mount St Helens suddenly exploded. This volcanic eruption was so violent that it blew off the top of the mountain. Ash particles and volcanic gases spread throughout the Earth's atmosphere.



By Mike Doukas (USGS Cascades Volcano Observatory)  
[Public domain], via Wikimedia Commons

(a) Mount St Helens is on a boundary between two of the Earth's tectonic plates.

Draw a ring around the correct word to complete the sentences.

(i) The Earth's tectonic plates are made up of the upper part of the mantle

and the 

atmosphere.
core.
crust.

(1)

(ii) The movement of the Earth's tectonic plates is caused by convection currents within the mantle. These convection currents are driven by heat released by

natural 

combustion
radioactive
shrinking

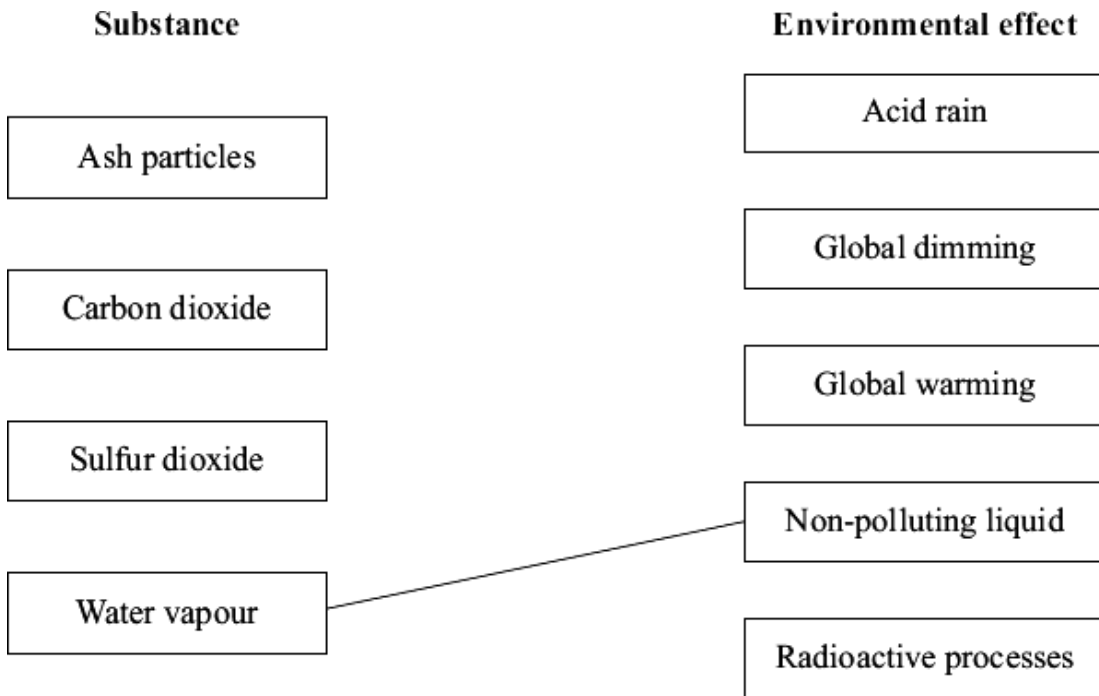
 processes.

(1)

- (b) The volcano released large amounts of ash particles, carbon dioxide, sulfur dioxide and water vapour.

Draw **one** straight line from each substance to an environmental effect that it causes.

One has been done for you.



(3)

- (c) Why do volcanic eruptions and earthquakes happen?

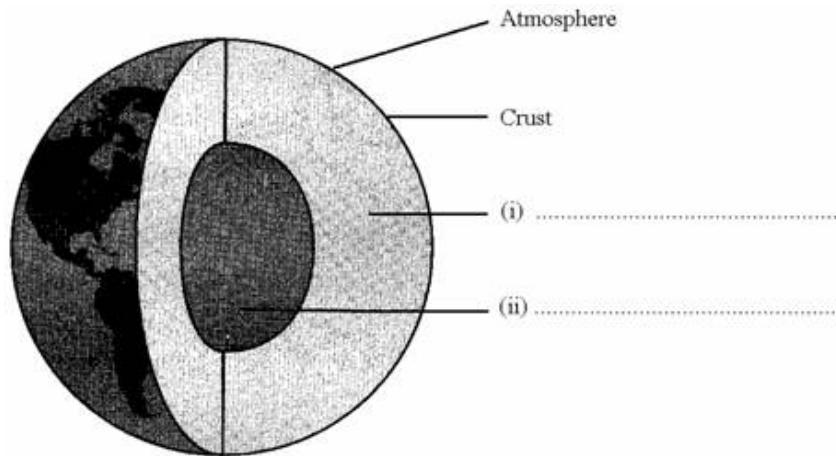
.....  
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(1)

(Total 6 marks)

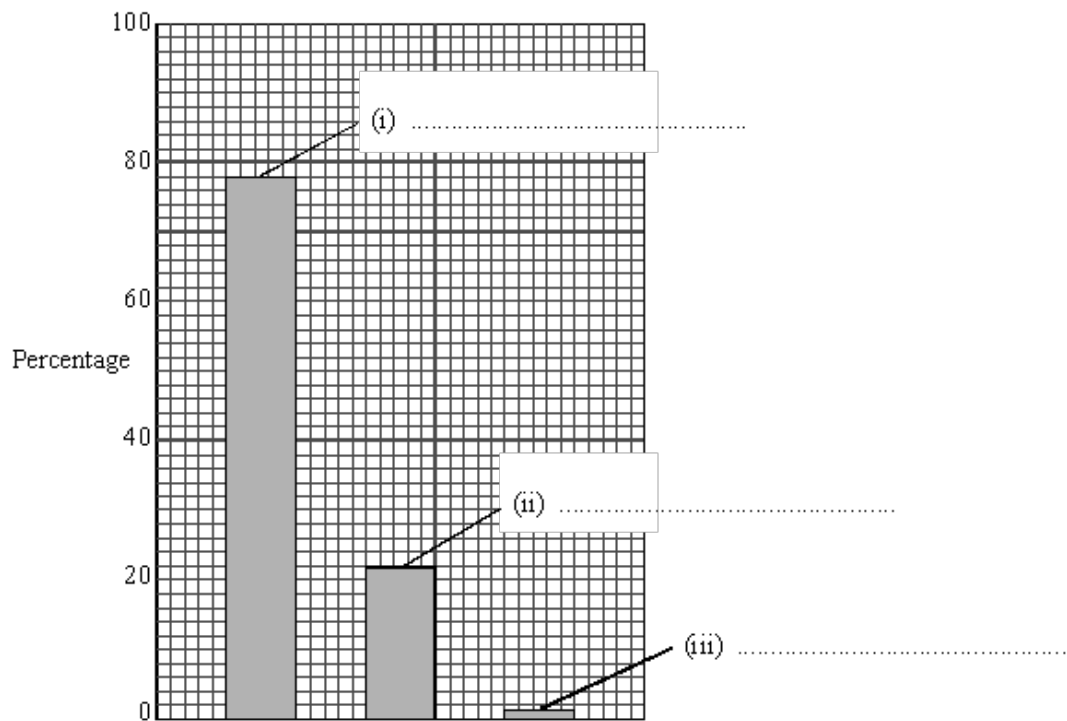
Q3. (a) The diagram shows the Earth's layered structure.

Name parts (i) and (ii).



(2)

(b) The bar chart shows the composition of a sample of dry air from the Earth's atmosphere. Name the **three** gases shown in the bar chart.



(3)

(c) The Earth's crust is a set of slow-moving plates. There are fold mountains at some places where the plates meet.

Give examples of **two** other types of geological features or activities which usually occur at these places.

1 .....

2 .....

(2)

(d) One carbon compound is methane. Its chemical formula is  $\text{CH}_4$ .

(i) What is the name of the element which is combined with carbon in methane?

.....

(1)

(ii) Complete the word equation for the chemical reaction which usually takes place when methane burns.

methane + .....  $\rightarrow$  carbon dioxide + water

(1)

(Total 9 marks)

**Q4.** Petrol is a hydrocarbon fuel.

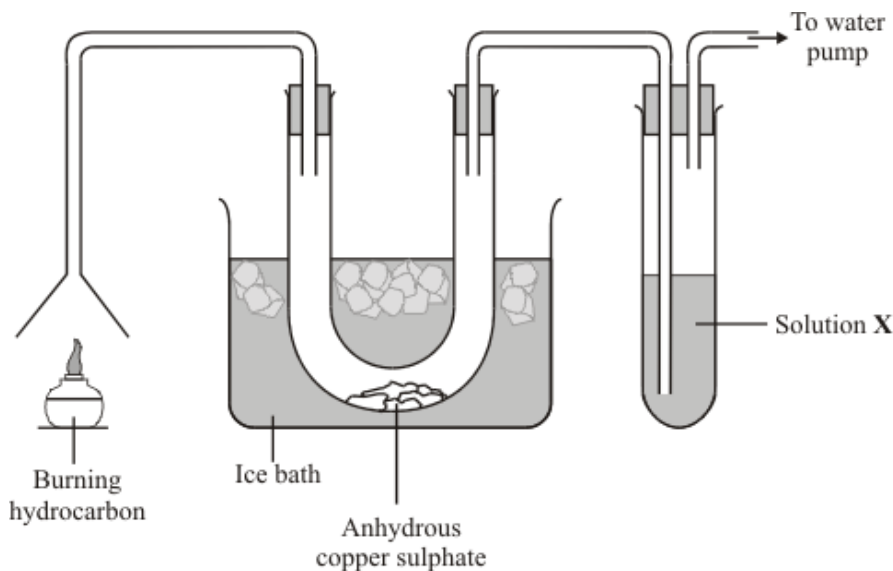
(a) Complete this sentence.

Hydrocarbons are compounds which are made from the elements .....

and ..... only.

(2)

(b) This apparatus was used to study the combustion of a hydrocarbon fuel.



(i) Name the substance which changed the anhydrous copper sulphate from white to blue.

.....

(1)

(ii) Carbon dioxide is also produced when the hydrocarbon fuel is burned. Name the solution, labelled X on the diagram, which tests for carbon dioxide.

.....

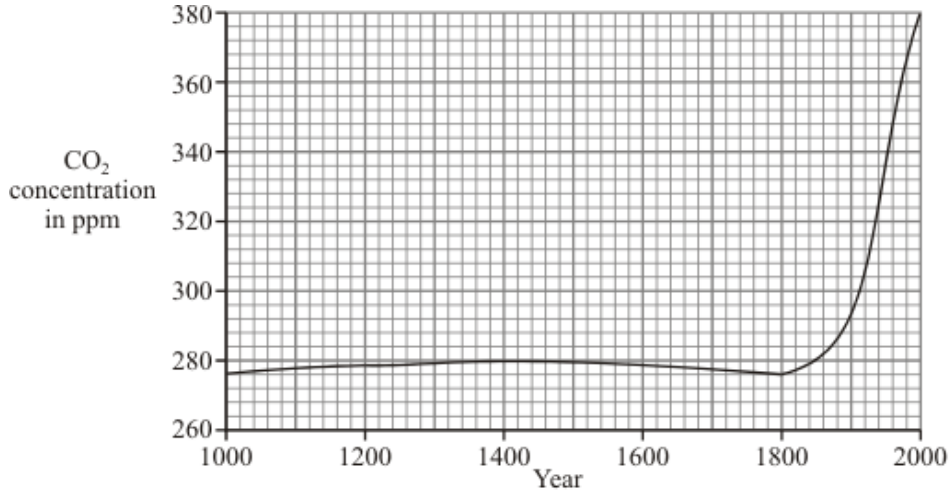
(1)

(iii) Complete this sentence.

Carbon dioxide turns solution X .....

(1)

(c) The graph shows how the concentration of carbon dioxide in the air has varied since the year 1000.



(i) Describe the changes in the concentration of carbon dioxide in the air since the year 1000.

.....  
.....  
.....  
.....  
.....  
.....  
.....

(3)

(ii) Suggest why the concentration of carbon dioxide in the air has changed since the year 1800.

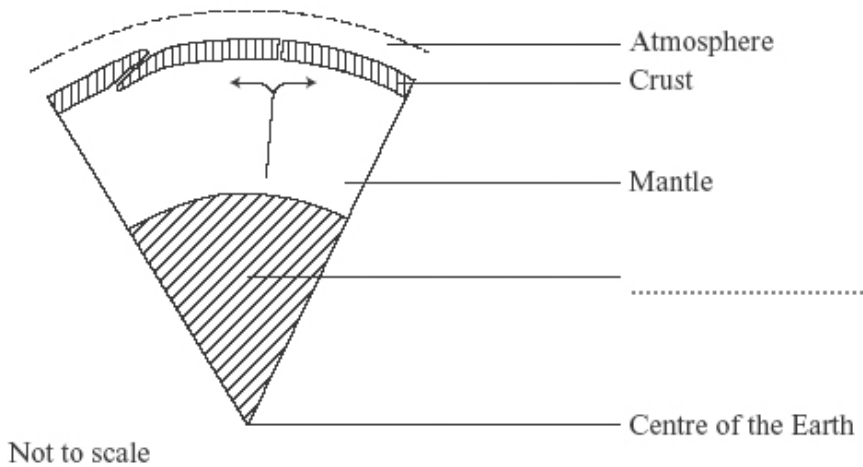
.....  
.....

(1)

(Total 9 marks)

**Q5.** The Earth is shaped like a sphere and is surrounded by an atmosphere.

(a) The diagram shows a section of the layered structure of the Earth.



(i) Complete the diagram by writing in the missing label.

(1)

(ii) Earthquakes within the Earth's crust can be sudden and disastrous. Scientists cannot accurately predict when earthquakes will occur.

Explain why.

To obtain full marks you must support your answer with a description of what causes earthquakes.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)



- (b) Some theories suggest that the Earth's early atmosphere was like the atmosphere of Mars today.

<b>Gases</b>	<b>The atmosphere of Mars today</b>	<b>The atmosphere of Earth today</b>
Carbon dioxide %	95	0.03
Nitrogen %	3	
Argon %	1.5	0.97
Oxygen %	0.5	21

- (i) Complete the table by writing in the percentage of nitrogen in the atmosphere of Earth today.

(1)

- (ii) Use the information in the table to describe the changes that have happened to **two** of the gases in the Earth's atmosphere.

Explain what has caused these changes.

.....

.....

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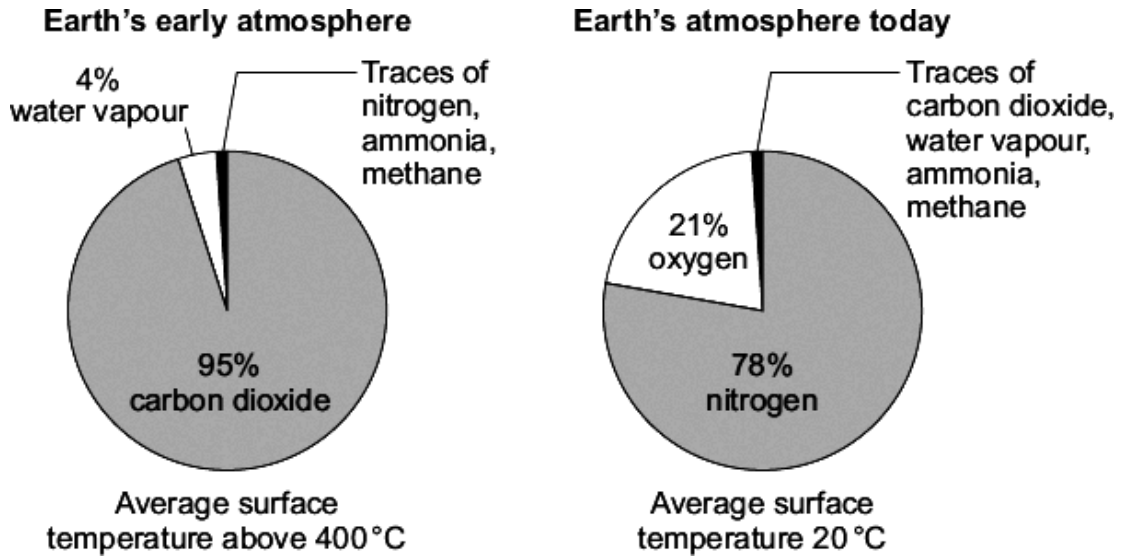
(4)

(Total 10 marks)

Q6. (a) Scientists have suggested that:

- the Earth formed as a molten ball of rock and minerals
- the rock and minerals cooled slowly
- the surface of the Earth was covered by volcanoes
- the volcanoes released gases that formed the Earth's early atmosphere.

The pie charts show the approximate percentages of gases in the Earth's early atmosphere and in the Earth's atmosphere today.



(i) Explain what has happened to most of the water vapour in the Earth's early atmosphere.

.....  
.....  
.....  
.....

(2)

(ii) Give **two** reasons why the percentage of carbon dioxide in the Earth's early atmosphere decreased.

1 .....

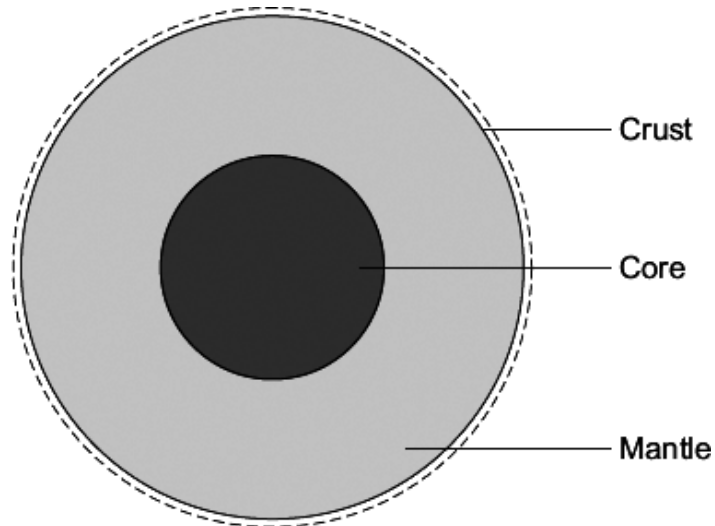
.....

2 .....

.....

(2)

(b) Scientists have suggested that the Earth consists of a core, mantle and crust.



A 'traditional' theory is that the core is made of iron and nickel.

A 'controversial' theory is that the core is like a nuclear reactor made of the radioactive elements uranium and plutonium.

(i) Why can scientists **not** prove which theory about the core is correct?

.....  
.....

(1)

(ii) How can the 'controversial' theory be used to explain why the Earth's tectonic plates move?

.....  
.....  
.....  
.....  
.....  
.....

(3)

(Total 8 marks)

**Q7.** Many human activities result in carbon dioxide emissions.  
Our carbon footprint is a measure of how much carbon dioxide we each cause to be produced.

(a) Why should we be concerned about our carbon footprint?

.....  
.....  
.....

(1)

(b) Most power stations in the UK burn coal.  
Coal was formed from tree-like plants over millions of years.

Suggest why burning wood instead of coal would help to reduce our carbon footprint.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

(3)

(Total 4 marks)

**Q8.** Venus is often compared to the Earth. The Earth's early atmosphere was mainly carbon dioxide like the atmosphere of Venus today.

Atmosphere of Earth today		Atmosphere of Venus today	
Gas	Percentage (%)	Gas	Percentage (%)
Nitrogen	78	Nitrogen	3.5
Oxygen	21	Oxygen	A trace
Carbon dioxide	0.04	Carbon dioxide	96

(a) Give **two** reasons why the percentage of carbon dioxide decreased in the Earth's early atmosphere.

.....

.....

.....

.....

(2)

(b) In the 1950s two scientists, Miller and Urey, investigated the origin of life on Earth. Miller and Urey used the gases that they believed were in the Earth's early atmosphere and used water to represent the oceans.

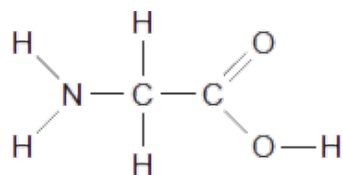
The gases they used were methane ( $\text{CH}_4$ ), ammonia ( $\text{NH}_3$ ) and hydrogen ( $\text{H}_2$ ).

A continuous electrical spark was used to simulate lightning storms.

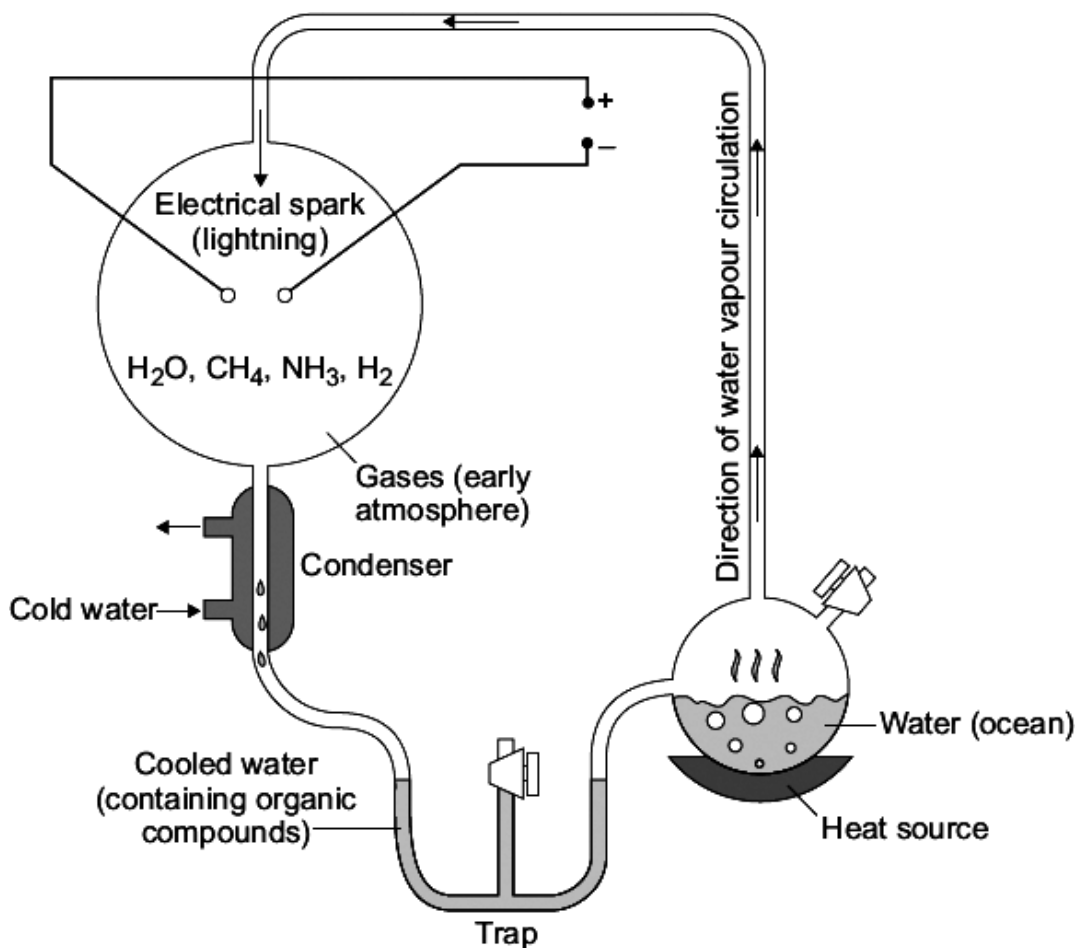
After one week the Miller-Urey experiment had produced amino acids.

Amino acids are essential to life.

The simplest amino acid is glycine (aminoethanoic acid).



The apparatus used in the Miller-Urey experiment is shown in the diagram.



Use the information above and in the diagram to answer these questions.

- (i) Miller and Urey used methane, ammonia and hydrogen for the Earth's early atmosphere.

Suggest why.

.....  
 .....

(1)

- (ii) The experiment provides only weak evidence of how amino acids formed on Earth.

Suggest **two** reasons why.

.....  
 .....

(2)

(Total 5 marks)

**Q9.** The amount of carbon dioxide in the Earth's atmosphere has changed since the Earth was formed.

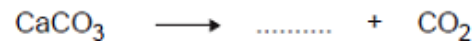
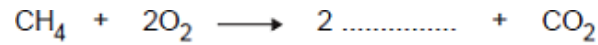
The amount of carbon dioxide continues to change because of human activities.

- (a) Cement is produced when a mixture of calcium carbonate and clay is heated in a rotary kiln. The fuel mixture is a hydrocarbon and air.

Hydrocarbons react with oxygen to produce carbon dioxide.

Calcium carbonate decomposes to produce carbon dioxide.

- (i) Complete each chemical equation by writing the formula of the other product.



(2)

- (ii) Hydrocarbons and calcium carbonate contain *locked up* carbon dioxide.

What is *locked up* carbon dioxide?

.....

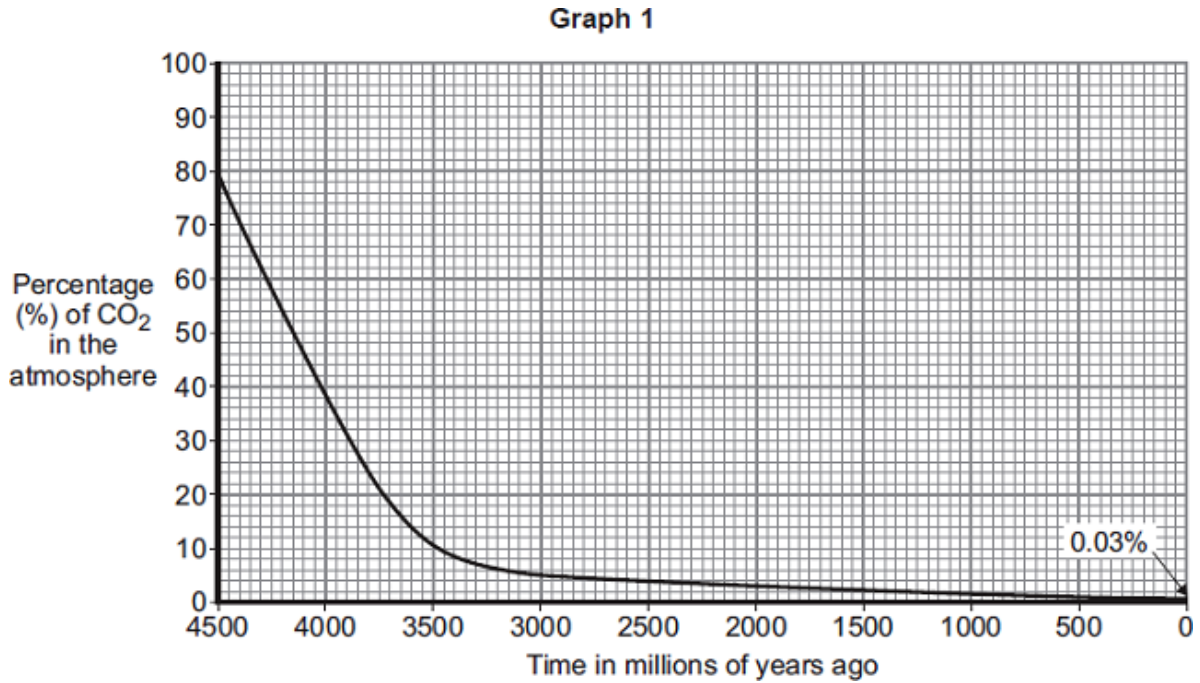
.....

.....

.....

(2)

- (b) **Graph 1** shows how the percentage of carbon dioxide in the atmosphere changed in the last 4500 million years.



Use information from **Graph 1** to answer these questions.

- (i) Describe how the percentage of carbon dioxide has changed in the last 4500 million years.

.....

.....

.....

.....

(2)

- (ii) Give **two** reasons why the percentage of carbon dioxide has changed.

.....

.....

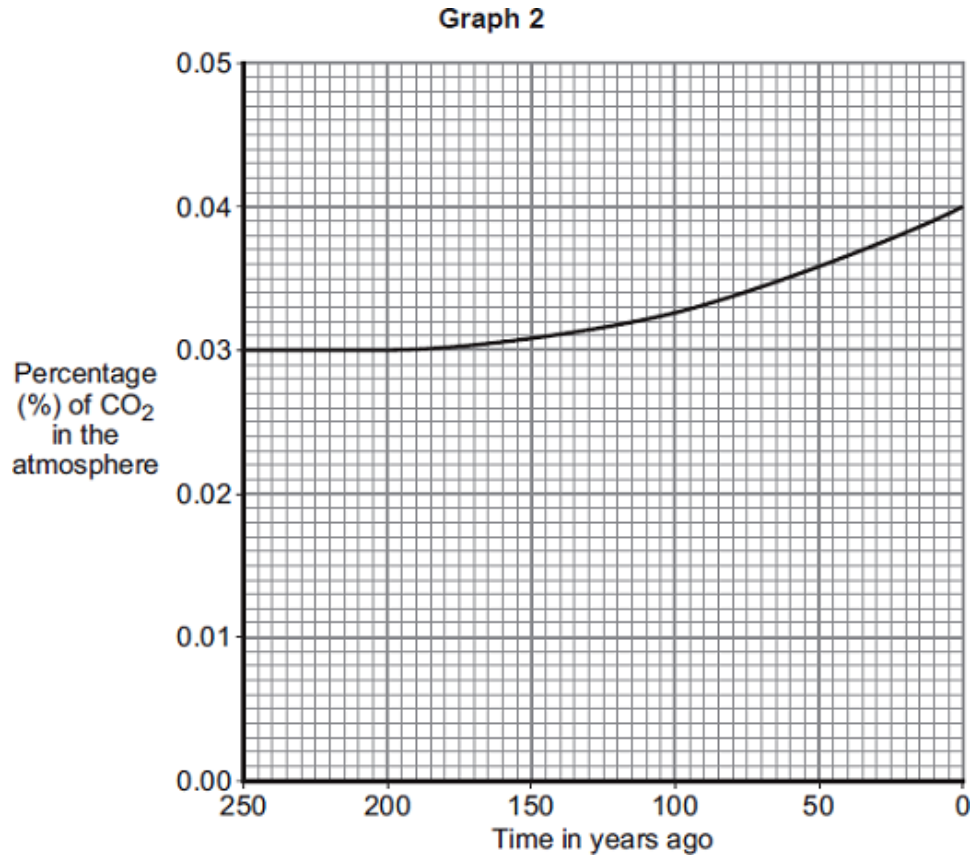
.....

.....

(2)



- (c) **Graph 2** shows how the percentage of carbon dioxide in the atmosphere changed in the last 250 years.



Should we be concerned about this change in the percentage of carbon dioxide?

Explain your answer.

.....

.....

.....

.....

(2)  
(Total 10 marks)

**Q10.** For 200 million years the proportions of the different gases in the atmosphere have been much the same as today. Over the past 150 years the amount of carbon dioxide in the atmosphere has increased from 0.03% to 0.04%.

(a) Describe how carbon dioxide is released into the atmosphere:

(i) by human and industrial activity;

.....  
.....  
.....  
.....

(2)

(ii) from carbonate rocks by geological activity.

.....  
.....  
.....  
.....

(2)

(b) Explain how the seas and oceans can decrease the amount of carbon dioxide in the atmosphere.

.....  
.....  
.....  
.....  
.....  
.....

(3)

(c) (i) Give **one** reason why the amount of carbon dioxide in the atmosphere is increasing gradually.

.....  
.....

(1)

- (ii) Give **one** effect that increasing levels of carbon dioxide in the atmosphere may have on the environment.

.....  
.....

(1)  
(Total 9 marks)

- Q11.** (a) Apart from water vapour, two gases account for about 99% of the present atmosphere of our planet.

What are the names of these gases?

..... and .....

(1)

- (b) Scientists now have evidence that, over three billion years ago, our planet's atmosphere was mostly a mixture of water vapour, carbon dioxide, methane and ammonia. Since then the mixture has gradually changed.

- (i) Suggest why there is now less water vapour in the atmosphere.

.....  
.....  
.....  
.....

(2)

- (ii) Suggest why there is now less carbon dioxide in the atmosphere.

.....  
.....  
.....  
.....

(2)

- (c) The following information suggests that the continents of Africa and South America were once joined together but then began to move apart.

Fossilised remains of a large fern-like plant called *Glossopteris* have been found in the rocks of the Carboniferous period in both Africa and South America.

Fossilised remains of a freshwater reptile called *Mesosaurus* have been found in the rocks of the Permian period in both Africa and South America.

No fossils of identical organisms have been found in the rocks of the Jurassic or the Cretaceous period in Africa or South America.

The following table gives the names of some of the periods in our planet's geological history.

Start of the period millions of years ago	Name of the period
2	Quaternary
65	Tertiary
136	Cretaceous
190	Jurassic
225	Triassic
280	Permian
345	Carboniferous
395	Devonian
435	Silurian
500	Ordovician
570	Cambrian

- (i) Use this information to suggest when Africa and South America began to move apart.

About ..... million years ago.

(1)

- (ii) What conditions were necessary for Africa and South America to move apart?

.....  
.....  
.....  
.....  
.....  
.....

(3)

(Total 9 marks)

**Q12.** Scientists study the atmosphere on planets and moons in the Solar System to understand how the Earth's atmosphere has changed.

(a) Millions of years ago the Earth's atmosphere was probably just like that of Mars today.

The table shows data about the atmosphere of Mars and Earth today.

<b>Mars today</b>		<b>Earth today</b>	
nitrogen	3%	nitrogen	78%
oxygen	trace	oxygen	21%
water	trace	water	trace
Carbon dioxide	95%	Carbon dioxide	trace
Average surface temperature $-23^{\circ}\text{C}$		Average surface temperature $15^{\circ}\text{C}$	

The percentages of some gases in the Earth's atmosphere of millions of years ago have changed to the percentages in the Earth's atmosphere today.

For **two** of these gases describe how the percentages have changed **and** suggest what caused this change.

.....

.....

.....

.....

(2)

- (b) Titan is the largest moon of the planet Saturn.  
Titan has an atmosphere that contains mainly nitrogen.  
Methane is the other main gas.

Main gases in Titan's atmosphere	Percentage (%)	Boiling point in °C
Nitrogen	95	-196
Methane	5	-164
Average surface temperature -178°C		

When it rains on Titan, it rains methane!

Use the information above and your knowledge and understanding to explain why.

.....  
.....  
.....  
.....  
.....  
.....

(2)

- (c) Ultraviolet radiation from the Sun produces simple alkenes, such as ethene ( $C_2H_4$ ) and propene ( $C_3H_6$ ) from methane in Titan's atmosphere.

State the general formula for alkenes.

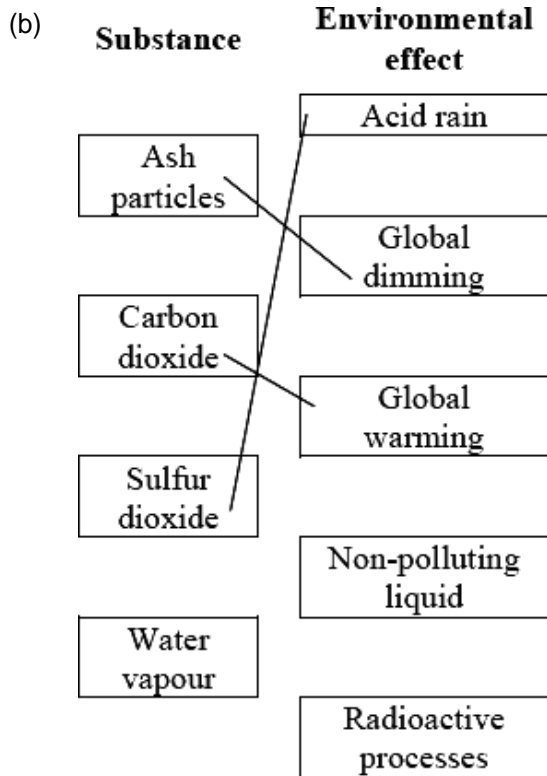
.....

(1)

(Total 5 marks)

- M1.** (a) layer 1 – crust  
*extra line from a layer cancels the mark* 1
- layer 2 – mantle 1
- layer 3 – core 1
- (b) (i) 0.97  
*extra ring drawn cancels the mark* 1
- (ii) carbon dioxide / CO<sub>2</sub> 1
- [5]

- M2.** (a) (i) core 1
- (ii) radioactive 1



all three correct = 3 marks  
 two correct = 2 marks  
 one correct = 1 mark  
 extra line from a statement cancels the mark

3

(c) any **one** from:

- (tectonic) plates move  
*idea of movement is required*
- faults / plate boundaries
- weaknesses in the (Earth's) crust

1

[6]

M3. (a) (i) mantle

1

(ii) **core**  
*or outer core do not credit inner core*

1



(b)	(i)	nitrogen <i>accept N<sub>2</sub> only</i>	1
	(ii)	oxygen <i>accept O<sub>2</sub> only</i>	1
	(iii)	argon <i>accept Ar</i> <i>accept inert gas(es) or noble gas(es) not just 'other gases'</i>	1
(c)		any <b>two</b> from	
		* earthquake(s) <i>or tremor(s) or seismic waves or tsunami not tidal waves</i>	
		* volcano(es) <i>or volcanic activity / sill(s) dyke(s) / lava flow(s)</i>	
		* (oceanic) trench(es)/ destructive margins <i>accept named feature e.g. Pacific Trench</i> <i>accept vents</i>	
		* rift(s) <i>accept named feature e.g. Great Rift Valley not valleys</i>	
		* subduction / collision zones <i>accept fault(s)</i>	
		* (oceanic) ridges / constructive margins <i>recycling of rocks accept named feature</i>	
		* forms new islands <i>e.g. Mid-Atlantic Ridge</i>	2
(d)	(i)	hydrogen <i>do not credit H</i>	1
	(ii)	oxygen <i>do not credit air accept O<sub>2</sub></i>	1
<b>M4.</b>	(a)	hydrogen <i>accept correct symbols but not H<sub>2</sub></i>	1
		carbon	1

[9]

- (b) (i) water  
*accept  $H_2O$*  1
- (ii) limewater / calcium hydroxide  
*accept  $Ca(OH)_2$*  1
- (iii) milky / cloudy / chalky / white 1
- (c) (i) remains almost the same / increases then decreases slightly from 1000 to 1800 1
- increases / rises after 1800 1
- rapidly (owtte) 1
- (ii) increased burning of hydrocarbon / (fossil) fuels, etc. **or**  
increased use of fuels  
*accept deforestation*  
*accept (more) cars / lorries / planes etc.*  
*accept power stations*  
*do **not** accept just 'factories'* 1

[9]

M5.	(a) (i) core	1
	(ii) plate (boundaries) <i>accept parts of the crust</i> <i>ignore crust alone</i>	1
	sudden movement / colliding <i>accept movement but ignore movement apart</i>	
	<b>or</b>	
	normally move a few centimetres per year <i>accept continental drift</i>	1
	convection currents / driven by heat from radioactive processes / decay <i>idea of source of energy for the movement</i>	1
	the idea of uncertainty with an explanation eg scientists do not know (with any certainty)	
	<ul style="list-style-type: none"> <li>• what happens under the crust</li> <li>• where the forces / pressure are building up</li> <li>• we cannot measure the forces</li> <li>• when the forces reach their limit <i>ignore references to volcanoes</i></li> </ul>	1
(b)	(i) 78	
	(ii) marks awarded for any 2 gases from the following 3 gases <i>max 3 marks from CO<sub>2</sub></i>	1
	any <b>four</b> from: <i>ignore references to respiration</i>	
	carbon dioxide has decreased:	
	<ul style="list-style-type: none"> <li>• used by plants / bacteria (stromatolites)</li> <li>• during photosynthesis (must be linked to CO<sub>2</sub> decrease)</li> <li>• 'locked up' in (sedimentary) rocks / carbonates / fossil fuels</li> <li>• dissolved in oceans</li> </ul>	

**and / or**

oxygen has increased because:

- released by plants / bacteria (stromatolites)
- during photosynthesis (must be linked to O<sub>2</sub> increase)

**and / or**

nitrogen has increased because

- ammonia reacted with oxygen (to release nitrogen)
- nitrogen is released by bacteria

4

[10]

**M6.** (a) (i) *it = water vapour*

condensed

*accept temperature went below 100°C / boiling point of water*

*allow cooled to form liquid / water / rain*

*do **not** accept evaporated*

1

formed the oceans / seas

*ignore rain*

*accept (water vapour) cooled and formed the ocean / sea for **2** marks*

1

(ii) any **two** from:

*ignore oxygen / nitrogen increased*

*ignore reference to volcanoes / respiration*

- used by (green) plants / algae  
*accept photosynthesis / plants give out oxygen*
- changed into oxygen
- dissolved in oceans / seas  
*accept (locked up) in shells / skeletons (of animals)*
- (locked up) in carbonates / sedimentary rocks
- (locked up) in fossil fuels / named fossil fuel

2

- (b) (i) cannot get to / reach / drill to / see the core  
*accept the core is (too) far down (into the Earth) / do not know what happens under the crust / Earth's surface*  
*accept it is (too) hot / radioactive*  
*ignore lack of evidence unqualified*

1

- (ii) any **three** from:

- heat / *energy released*
- from radioactive decay / processes  
*accept radioactivity / nuclear reactions*
- (causing) convection currents
- in the mantle

3

[8]

- M7.** (a) (thought to cause) global warming / green house (effect) / climate change  
*ignore other consequences of global warming*  
*do **not** accept acid rain / ozone layer / global dimming*

1

- (b) any **three** from:

- replant trees / renewable / sustainable  
*ignore reusable*
- carbon (dioxide) used by trees / photosynthesis  
*accept trees absorb carbon (dioxide) as they grow*  
*ignore respiration*
- it is a (continuous / carbon) cycle  
*accept burning wood is carbon neutral*

**or**

carbon (dioxide) goes back into the air

*for the **second** and **third** bullet points: accept trees use carbon dioxide which is released when (trees / wood are / is) burnt for 2 marks*

- no new carbon (dioxide) is produced

**or**

no locked up carbon (dioxide) is released

**or**

the carbon (dioxide) was absorbed millions of years ago

3

[4]

**M8.** (a) any **two** from:

- carbon dioxide dissolves in water/oceans
- marine organisms use (dissolved) carbon dioxide to form their shells/skeletons  
**or**  
limestone was formed from the shells/skeleton of marine organisms  
*accept carbon dioxide became locked up in sedimentary rocks/carbonates/limestone*  
**or**  
*precipitation or formation of insoluble carbonates*
- plants / algae photosynthesise/ absorb/use carbon dioxide  
*accept remains of plants/algae/ marine organisms contain locked up carbon dioxide/carbon in the form of fossil fuels*  
*do **not** accept plants use carbon dioxide for respiration*

2

- (b) (i) because these gases/molecules contain the elements / atoms in amino acids  
**or** the gases / they contain carbon, hydrogen and nitrogen  
*ignore oxygen*

1

- (ii) *ignore small-scale / timescale*  
*ignore references to water/oceans or other theories*

any **two** from:

- nobody knows what was in the Earth's early atmosphere  
*accept these gases / hydrogen / methane / ammonia may not have been in the Earth's early atmosphere*  
*accept carbon dioxide / nitrogen may have been in the Earth's early atmosphere*  
*accept reference to Venus' present atmosphere*  
*ignore concentration of gases*
- there may not have been (continuous) lightning
- Miller and Urey selected only the gases needed to produce amino acids

2

[5]

**M9.** (a) (i)  $H_2O$

*must be formula*

1

CaO

*must be formula*

1

- (ii) carbon dioxide from the air / (Earth's early) atmosphere  
*it = carbon (dioxide)*  
*accept carbon dioxide from millions of years ago* 1
- formed (sedimentary) rocks **or** fossil fuels  
*ignore trapped / stored* 1
- (b) (i) decreases rapidly at first  
*it = carbon (dioxide)* 1
- then slowly **or** levels off  
*allow both marks if the description is correct using either 'rapidly' or 'slowly'*  
*allow correct use of figures for either marking point*  
*if no other mark awarded, allow CO<sub>2</sub> decreased for 1 mark* 1
- (ii) any **two** from:  
*it = carbon (dioxide)*  
*accept photosynthesis*
- used by plants
  - dissolved in oceans
  - 'locked up' in fossil fuels **or** formed fossil fuels
  - 'locked up' in rocks **or** formed rocks
- 2
- (c) (yes)  
*it = percentage of carbon (dioxide)*  
*ignore yes or no*
- because the percentage of carbon dioxide is increasing 1
- which causes global warming (to increase)  
*allow (carbon dioxide) causes greenhouse effect/climate change* 1
- or**
- (no)
- because the percentage of carbon dioxide is low (1)
- compared to millions of years ago (1)  
*allow global warming can be caused by other factors (e.g. Sun / water vapour / methane)*

[10]

- M10.** (a) (i) burning / breathing / respiration / fuels / food  
*for 1 mark each* 2
- (ii) 1. rock is heated / subducted (owtte) / close to magma / melted  
1. rock is decomposed / carbon dioxide released through volcanoes  
*for 1 mark each* 2
- (b) carbon dioxide reacts / dissolves in sea-water / dissolves in rain water  
insoluble carbonates / calcium carbonate are / is formed carbon dioxide turned into shells /  
coral / limestone / chalk / sediments also soluble hydrogencarbonates (calcium /  
magnesium) are formed photosynthesis by plants  
*any three for 1 mark each* 3
- (c) (i) sea unable to absorb all the extra carbon dioxide being produced  
more trees being cut down / deforestation increased burning of fuels / more cars /  
more industry (*not* more people)  
*any one for 1 mark* 1
- (ii) global warming / greenhouse effect or effects such as melting ice caps /  
rising sea levels / climatic change / more deserts  
(*not* changes to ozone layer)  
*for one mark* 1

[9]

- M11.** (a) nitrogen and oxygen  
*both required either order* 1
- (b) (i) any **two** from  
  
(atmosphere) is now cooler water vapour has condensed  
to form sea(s) / ocean(s) 2
- (ii) any **two** from  
  
has dissolved in / reacted with seawater has formed carbonates  
(evolution of green) plants removed by photosynthesis  
has formed fossil fuels 2
- (c) (i) 225  
*accept any date in the Triassic period*  
*225 – 191 (mya)*  
*do not credit 190 (mya)* 1



- (ii) on different (tectonic) plates  
*or answer refers to African and South American plates* 1
- (movement) due to convection currents in the mantle 1
- due to energy / heat from the core  
*or due to radioactivity* 1

[9]

- M12.** (a) any **two** from:  
*asks for cause therefore no marks for just describing the change  
 must link reason to a correct change in a gas*

**carbon dioxide has decreased due to:**

*accept idea of 'used' to indicate a decrease*

- plants / microorganisms / bacteria / vegetation / trees
- photosynthesis  
*ignore respiration*
- 'locked up' in (sedimentary) rocks / carbonates / fossil fuels
- dissolved in oceans  
*ignore volcanoes*

**oxygen has increased due to:**

*accept idea of 'given out / produced'*

- plants / bacteria / microorganisms / vegetation / trees
- photosynthesis  
*ignore respiration*

**nitrogen increased due to:**

*accept idea of 'given out / produced'*

- ammonia reacted with oxygen
- bacteria / micro organisms  
*ignore (increase in) use of fossil fuels / deforestation*

2

- (b) (because methane's) boiling point is greater than the average / surface temperature  
**or** Titan's (average / surface) temperature is below methane's boiling point  
*ignore references to nitrogen or water*

1

any methane that evaporates will condense  
*accept boils for evaporates*  
*accept cooling and produce rain for condensing*

1



1

[5]

