The content on this sheet is assessed on paper 2 only.

Topic 8b—Earth and atmospheric science

* Indicates that these are some examples only: you could be asked about any substance / reaction.

8.18—Volcanic activity

Gases from volcanic eruptions formed the Earth's early atmosphere.

8.19—The Earth's early atmosphere

The Earth's early atmosphere thought to contain:

- a) little to no oxygen.
- b) large amount of carbon dioxide.
- c) some water vapour.
- d) small amounts of other gases.

You may be asked to interpret data from tables or graphs relating to this information.

8.20—Formation of the oceans

The oceans formed when the water vapour in the early atmosphere condensed to form liquid water.

8.21—CO₂ in the oceans

Over time, the levels of CO_2 decreased dramatically, as the CO_2 was able to dissolve in the oceans.

8.22—The growth of primitive plants

Plants started to appear on the Earth. These plants absorb carbon dioxide for the process of photosynthesis, which further reduced the amount of CO_2 in the atmosphere.

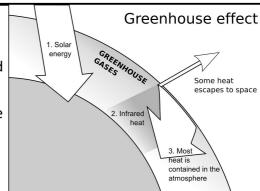
Oxygen gas is released as a 'waste' product of this process, and so the levels of oxygen in the atmosphere started to increase at this time as well.

8.23—Chemical test for oxygen

To test for oxygen, you place a glowing splint into the gas you suspect is oxygen. If the splint relights, then oxygen is present.

8.24—The greenhouse effect

Various gases in the atmosphere, but mainly methane, carbon dioxide and water vapour, absorb energy radiated from the Earth, and re-emit it back to the Earth. This process is known as the greenhouse effect, and keeps the Earth at a habitable temperature.



8.25—Human activity & climate change

a) There is a correlation between carbon dioxide percentage in the atmosphere and the mean global temperature. This is linked to the use of fossil fuels, such as coal and oil, by humans.

B) It is difficult to be sure that these measurements

NB. These graphs are an approximation only.

are accurate, due to issues with historical accuracy, and also the locations where measurements were taken.

r- one of the following of the following

8.26—The atmosphere today

- a) The atmosphere today consists mainly of nitrogen (~80%) and oxygen (~20%) with small amounts of other gases such as carbon dioxide, water vapour and argon.
- b) Human activities increase the levels of greenhouse gases such as methane and carbon dioxide in the atmosphere, particularly from farming and burning fossil fuels respectively.
- c) It is possible to mitigate the effects of these activities: however, companies must consider the scale, the associated risks and any environmental impact of these.