Pearson Edexcel

Additional Assessment Materials Summer 2021

Pearson Edexcel GCSE in Chemistry (1CH0) Foundation

Resource Set Topic M: Earth and atmospheric science

Questions

(Public release version)

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Additional Assessment Materials, Summer 2021

General guidance to Additional Assessment Materials for use in 2021

Context

- Additional Assessment Materials are being produced for GCSE, AS and A levels (with the exception of Art and Design).
- The Additional Assessment Materials presented in this booklet are an **optional** part of the range of evidence teachers may use when deciding on a candidate's grade.
- 2021 Additional Assessment Materials have been drawn from previous examination materials, namely past papers.
- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.

Purpose

- The purpose of this resource to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the mapping guidance which will map content and/or skills covered within each set of questions.
- These materials are only intended to support the summer 2021 series.

6c & 6d

(c) The amount of oxygen in the atmosphere has increased since the Earth's early atmosphere was formed.

Explain what has caused this change.

(2)

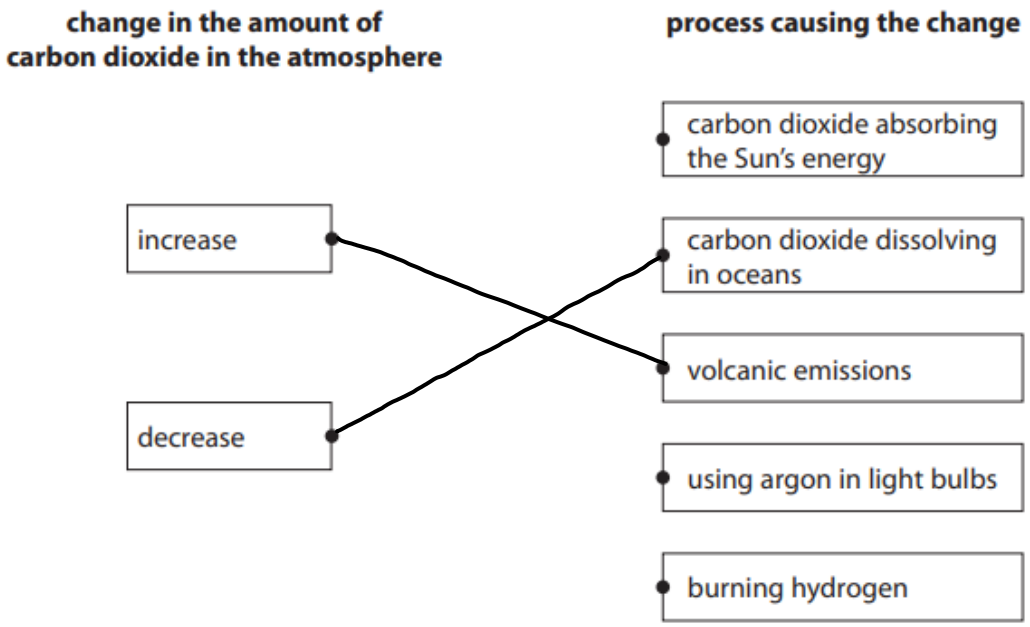
Photosynthetic plants and algae releases oxygen during photosynthesis.

(d) 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)



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(e) Figure 9 shows a graph of the amount of carbon dioxide in the Earth's atmosphere from 1985 to 2005.

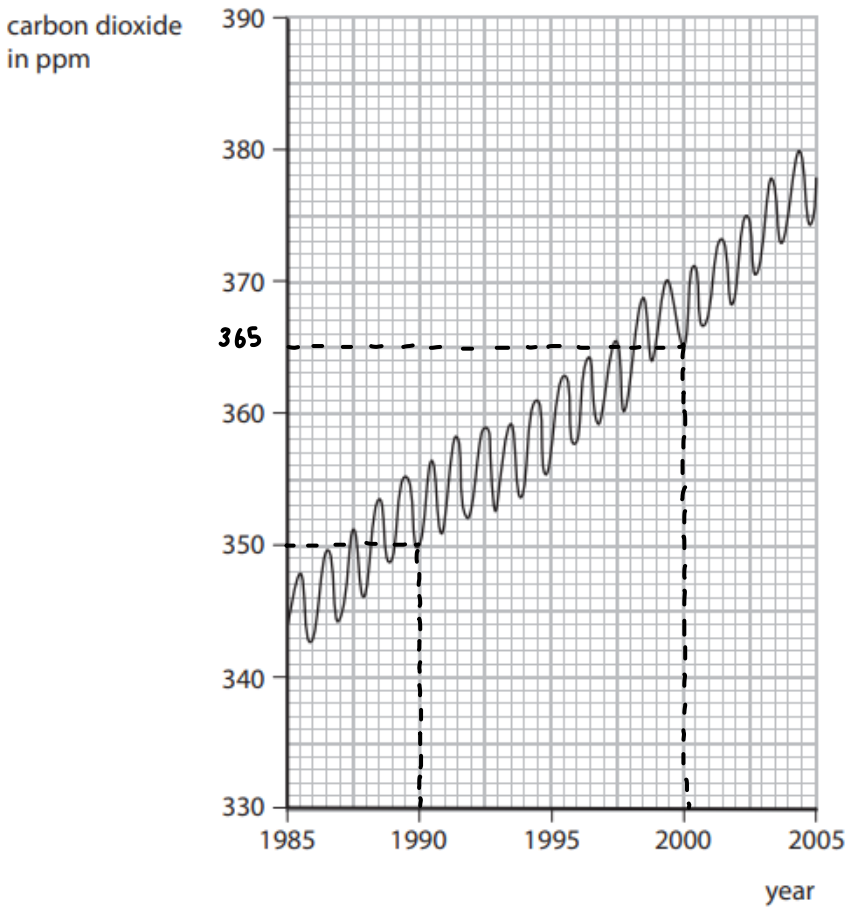

Figure 9

(i) Describe how the amount of carbon dioxide in the Earth's atmosphere varies within each year.

(1)

The amount of carbon dioxide in the Earth's atmosphere increases then decreases within each year.

(ii) Describe the overall trend in the amount of carbon dioxide in the Earth's atmosphere from 1985 to 2005.

(1)

The amount of carbon dioxide increases from 1985 to 2005.

(iii) Calculate the change in the amount of carbon dioxide in the Earth's atmosphere from the beginning of 1990 to the beginning of 2000.

(2)

365 - 350 = 15 ppm

change in amount = 15 ppm

1 (a) Plants release oxygen into the atmosphere.

What is the name of the process that releases oxygen into the atmosphere?

(1)

- ☒ **A** combustion
- ☒ **B** oxidation
- ☒ **C** photosynthesis
- ☒ **D** polymerisation

(b) The atmosphere contains 21% of oxygen.

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

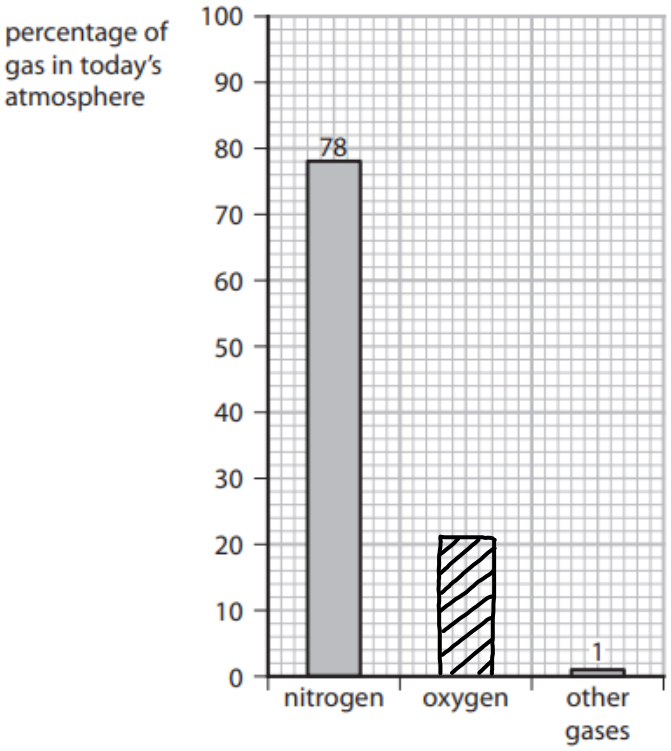

Figure 1

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)

$\frac{21}{100} \times 300 = 63$

volume of oxygen = 63 cm^3

(d) Which test shows a gas is oxygen?

(1)

☐ **A** a few drops of limewater will turn cloudy when shaken with the gas

☐ **B** a glowing splint will relight when placed in the gas

☐ **C** a lighted splint placed in the gas will cause a pop

☐ **D** a piece of damp red litmus paper will turn blue when placed in the gas

1 (a) The two most common gases in today's atmosphere are nitrogen and oxygen.

(i) What is the third most common gas in today's atmosphere?

(1)

☒ **A** argon

☒ **B** butane

☒ **C** chlorine

☒ **D** hydrogen

(ii) What is the percentage of oxygen in today's atmosphere?

(1)

☒ **A** 0.04

☒ **B** 1

☒ **C** 21

☒ **D** 78

(b) Give the name of the most common gas in the Earth's **early** atmosphere.

(1)

carbon dioxide

(c) 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)

when the atmosphere cooled down, water vapour condensed into liquid.

(d) 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)

410.83 - 407.96 = 2.87

≈ 3

increase in concentration of carbon dioxide = 3 ppm

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

(1)

combustion of fossil fuels

TOTAL FOR PAPER IS 21 MARKS