

Air and Water – 2019 Nov IGCSE

1. 0620/42/O/N/19/No.2

The gases Ar, CO₂, N₂ and O₂ are in clean, dry air.

CO, NO, NO₂ and SO₂ are gases commonly found in polluted air.

(a) What percentage of clean, dry air is N₂?

Give your answer to the nearest whole number.

..... % [1]

(b) Name the process used to separate O₂ from clean, dry air.

..... [2]

(c) State **one** major adverse effect of the pollutant SO₂.

..... [1]

(d) NO and NO₂ are produced in car engines.

Describe how oxides of nitrogen form in a car engine.

.....
.....
..... [2]

(e) Many cars have catalytic converters in their exhaust systems. In a catalytic converter, most of the CO and NO formed in a car engine is changed into less harmful products.

Identify these products and state the metal catalyst used.

products

catalyst

[3]

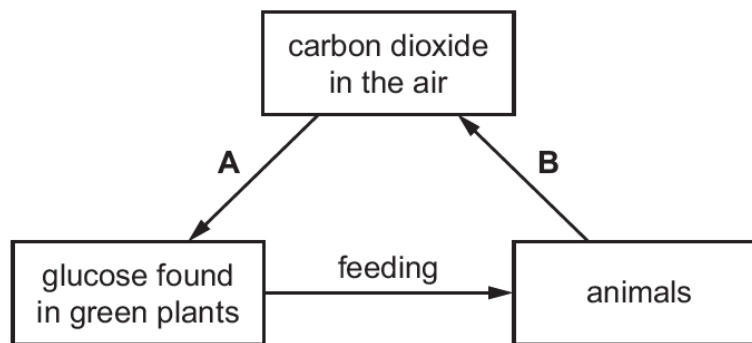
(f) CO is formed from the incomplete combustion of fossil fuels such as methane.

Write a chemical equation to show the incomplete combustion of methane.

..... [2]

(g) The CO₂ in air is part of the carbon cycle.

The scheme shows a simple representation of part of the carbon cycle.



(i) State the scientific terms for each of process **A** and process **B**.

A

B

[2]

(ii) Plants convert glucose into complex carbohydrates.

A unit of glucose can be represented as HO——OH.

Complete the diagram to show the complex carbohydrate formed from **three** units of glucose. Show all of the atoms and all of the bonds in the linkages.



[2]

(iii) Complex carbohydrates break down to form simple sugars.

State **two** ways that complex carbohydrates can be broken down into simple sugars.

1

2

[2]

(iv) Name a suitable technique for separating and identifying the individual sugars formed when complex carbohydrates are broken down.

..... [1]

[Total: 18]