

The Particulate nature of matter – 2019 Nov IGCSE

1. 0620/31/O/N/19/No.1

This question is about solids, liquids and gases.

(a) The list gives the names of nine substances which are solids at room temperature.

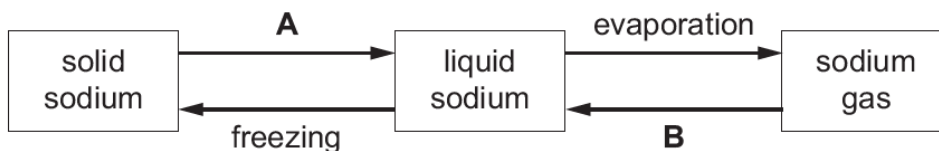
- a ceramic
- aluminium
- anhydrous cobalt(II) chloride
- anhydrous copper(II) sulfate
- calcium oxide
- graphite
- iodine
- iron
- sodium

Answer the following questions about these substances.
Each substance may be used once, more than once or not at all.

State which substance:

- (i) turns pink when water is added to it
..... [1]
- (ii) is a non-metal which is used as a lubricant
..... [1]
- (iii) is used to neutralise acidic industrial waste
..... [1]
- (iv) is extracted from bauxite
..... [1]
- (v) is used as an electrical insulator.
..... [1]

(b) Some changes of state of sodium are shown.



(i) State the names of the changes of state represented by **A** and **B**.

A

B

[2]

(ii) Use the kinetic particle model to describe the arrangement **and** separation of the particles in:

solid sodium

.....

.....

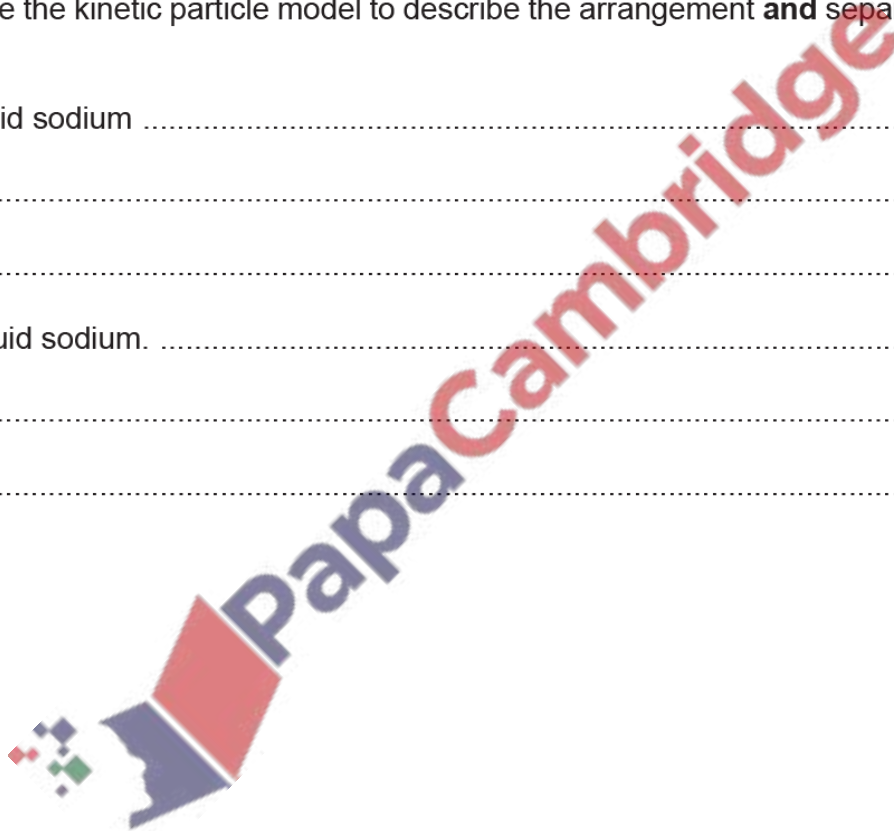
liquid sodium.

.....

.....

[4]

[Total: 11]



This question is about solids, liquids and gases.

(a) The list gives the names of nine substances.

- aqueous copper(II) sulfate
- aqueous potassium manganate(VII)
- aqueous sodium chloride
- dilute hydrochloric acid
- ethanol
- hexene
- mercury
- octane
- water

Answer the following questions about these substances.
Each substance may be used once, more than once or not at all.

State which substance:

(i) is an alkane

..... [1]

(ii) is used, when acidified, to test for sulfur dioxide

..... [1]

(iii) turns blue litmus red

..... [1]

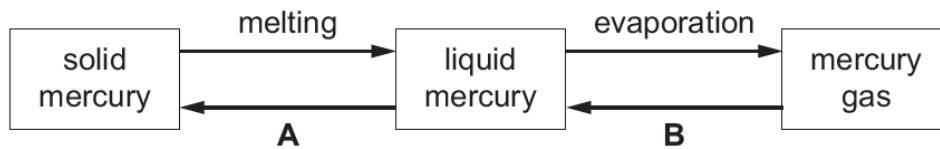
(iv) reacts with sodium to produce only aqueous sodium hydroxide and hydrogen

..... [1]

(v) is produced by the addition of steam to ethene.

..... [1]

(b) Some changes of state of mercury are shown.



(i) State the names of the changes of state represented by **A** and **B**.

A

B

[2]

(ii) Use the kinetic particle model to describe the motion **and** separation of the particles in:

liquid mercury

.....

.....

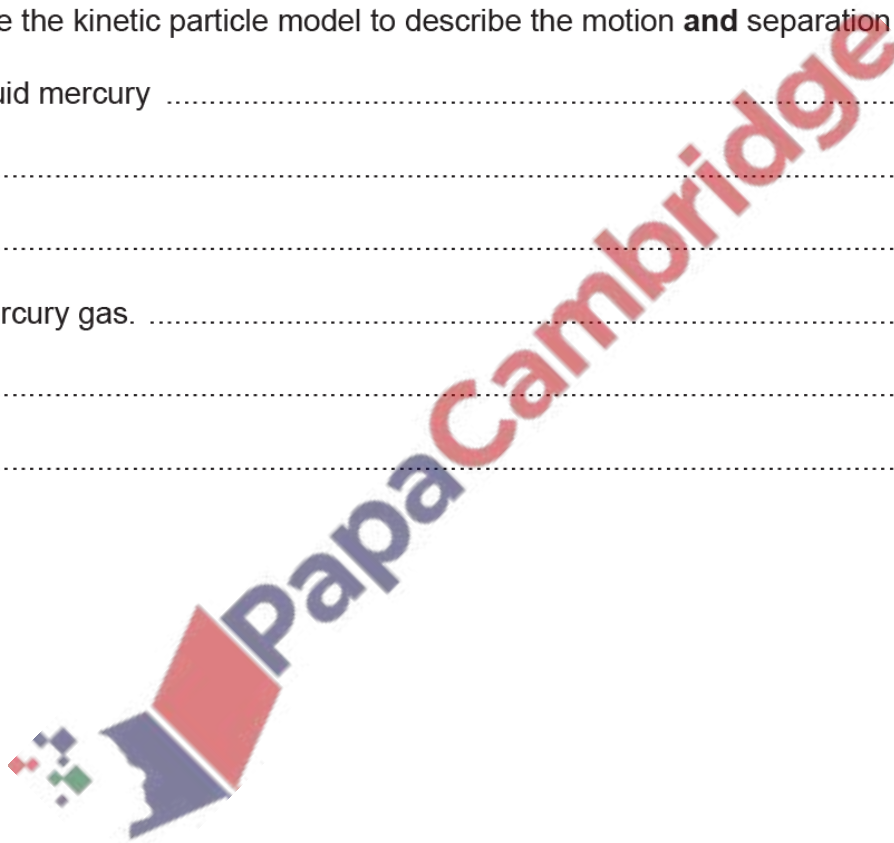
mercury gas.

.....

.....

[4]

[Total: 11]



This question is about solids and gases.

(a) The list gives the names of eight substances which are gases at room temperature.

- ammonia
- butane
- carbon dioxide
- carbon monoxide
- chlorine
- methane
- propene
- sulfur dioxide

Answer the following questions about these gases.
Each gas may be used once, more than once or not at all.

State which gas:

(i) is a poisonous product formed by the incomplete combustion of carbon

..... [1]

(ii) is an alkene

..... [1]

(iii) is formed when limestone is thermally decomposed

..... [1]

(iv) is an element

..... [1]

(v) causes acid rain.

..... [1]

(b) When a piece of solid carbon dioxide is placed in a warm room, it undergoes sublimation.

(i) What is meant by the term *sublimation*?

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

(ii) Use the kinetic particle model to describe the motion **and** separation of the particles in:

solid carbon dioxide

.....
.....

carbon dioxide gas.

.....
.....

[4]

[Total: 11]

