Kinetic Molecular of Matter – 2019 June

1. 0625/32/M/J/19/No.7

(a) Solid, liquid and gas are three states of matter.

For each state of matter describe the arrangement of the molecules.

solid .....

.....

liquid .....

.....

gas .....

..... [3]

(b) A liquid is spilt on a bench in a warm laboratory. After a short time, the liquid disappears.

(i) State the name of the process that causes the liquid to disappear.

..... [1]

(ii) The process in **(b)(i)** causes a cooling effect.

Explain why the cooling effect occurs. Use your ideas about molecules.

.....

.....

.....

.....

..... [3]

[Total: 7]

2. 0625/41/M/J/19/No.5

Liquids and gases are two states of matter.

(a) In both boiling and evaporation, a liquid changes into a gas.

(i) State **two** ways in which boiling differs from evaporation.

1. .....

.....

2. .....

.....

[2]

(ii) Before injecting a patient, a doctor wipes a small amount of a volatile liquid on to the patient's skin.

Explain, in terms of molecules, how this procedure cools the patient's skin.

.....

.....

.....

.....

..... [4]

(b) Gases can be compressed but liquids are incompressible.

Explain, in terms of molecules, why liquids are incompressible.

.....

.....

..... [2]

[Total: 8]

3. 0625/42/M/J/19/No.4

(a) State and explain, in terms of molecules, any change in the pressure of a gas when the volume is reduced at a constant temperature.

Statement .....

Explanation .....

.....

.....

.....

.....

.....

[3]

(b) Complete Table 4.1 to give the relative order of magnitude of the expansion of gases, liquids and solids for the same increase of temperature.

Write one of these words in each blank space:

gas **liquid** **solid**

Table 4.1

expands most	
expands least	

[2]

[Total: 5]

4. 0625/42/F/M/19/No.7

(a) In Fig. 7.1, the small circles represent molecules. The arrows refer to the change of state from the arrangement of molecules on the left to the arrangement of molecules on the right.

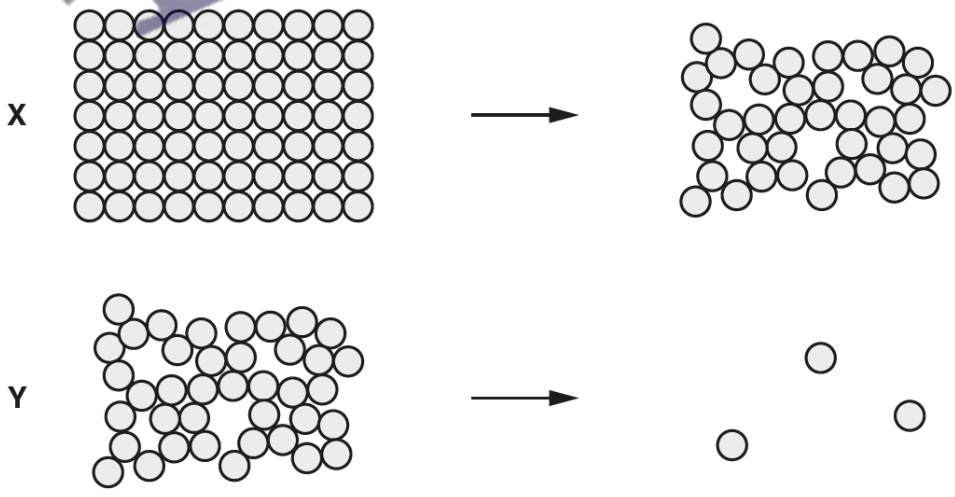

Fig. 7.1

Complete the following by writing solid, liquid or gas in each of the blank spaces.

1. Change of state **X** is from ..... to ..... .

2. Change of state **Y** is from ..... to ..... .

[2]

(b) Explain, in terms of the forces between their molecules, why gases expand more than solids when they undergo the same rise in temperature.

.....

.....

.....

..... [2]

(c) A cylinder of volume 0.012 m^3 contains a compressed gas at a pressure of 1.8×10^6 Pa.
A valve is opened and all the compressed gas escapes from the cylinder into the atmosphere.

The temperature of the gas does not change.

Calculate the volume that the **escaped** gas occupies at the atmospheric pressure of 1.0×10^5 Pa.

volume = ... [3]

[Total: 7]