Kinetic Molecular of Matter – 2022 June IGCSE 0625

1. June/2022/Paper_11/No.13

The list gives three properties of different states of matter.

1 They cannot be compressed significantly.

2 They can flow.

3 They always completely fill their container.

Which properties are correct for liquids?

A 1 and 2 only **B** 2 and 3 only **C** 1 and 3 only **D** 1, 2 and 3

2. June/2022/Paper_11/No.15

What happens to the volumes of liquid metal and of solid metal when heated at constant pressure?

	volume of liquid metal	volume of solid metal
A	decreases	increases
B	decreases	no change
C	increases	increases
D	increases	no change

3. June/2022/Paper_12/No.13

A particular state of matter consists of molecules that move freely in random directions at high speed. The average speed of the molecules is decreasing.

Which state of matter is being described?

A a gas cooling

B a gas being heated

C a solid cooling

D a liquid being heated

4. June/2022/Paper_12/No.14

Small pollen particles are suspended in water.

When viewed with a microscope, the pollen particles can be seen to be moving about irregularly.

What causes this movement?

A The pollen particles are being bombarded by the heavier particles of the water.

B The pollen particles are being bombarded by the lighter particles of the water.

C The temperature of the water is higher than that of the pollen particles.

D The temperature of the water is lower than that of the pollen particles.

5. June/2022/Paper_13/No.13

The properties of two states of matter are listed.

state 1 The molecules move quickly and randomly. There is a large distance between the molecules.

state 2 The molecules vibrate about fixed positions. The molecules are closely packed together.

What are states 1 and 2?

	state 1	state 2
A	gas	liquid
B	liquid	solid
C	solid	liquid
D	gas	solid

6. June/2022/Paper_13/No.14

A gas in a container is cooled but the volume of the gas does not change.

Which row describes the changes in the pressure of the gas and the average kinetic energy of the gas particles?

	pressure of gas	average kinetic energy of gas particles
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

7. June/2022/Paper_21/No.14

A sealed rigid container has a fixed volume. The container is filled with air.

The container is placed in a freezer cabinet and the temperature of the air in the container decreases.

Which row correctly describes what happens to the air in the container?

	average distance between air particles	average speed of air particles
A	decreases	increases
B	decreases	decreases
C	no change	increases
D	no change	decreases

8. June/2022/Paper_21/No.15

Two open containers are filled with water at room temperature. The containers have different shapes.

container 1 container 2

From which container does the water evaporate at the greater rate and how can the rate of evaporation be increased?

	container with the greater rate of evaporation	how the rate of evaporation can be increased
A	1	decrease the water temperature
B	1	increase the water temperature
C	2	decrease the water temperature
D	2	increase the water temperature

9. June/2022/Paper_22/No.14

The conditions of a sample of gas change in two stages.

stage 1 increase of temperature at constant volume

stage 2 increase of volume with no further change of temperature

Which row about the pressure after each stage is correct?

	stage 1 pressure compared to original pressure	stage 2 pressure compared to pressure after stage 1
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

10. June/2022/Paper_22/No.15

Small pollen particles are suspended in water.

When viewed with a microscope, the pollen particles can be seen to be moving about irregularly.

What causes this movement?

A The pollen particles are being bombarded by the heavier particles of the water.

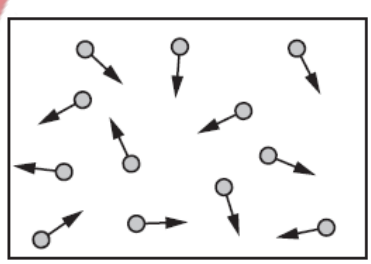
B The pollen particles are being bombarded by the lighter particles of the water.

C The temperature of the water is higher than that of the pollen particles.

D The temperature of the water is lower than that of the pollen particles.

11. June/2022/Paper_23/No.14

The diagram shows gas particles hitting the wall of a container. The system is at room temperature.



Why do the gas particles exert a pressure on the wall?

A When the particles hit the wall, their momentum changes, which causes a force.

B When the particles hit the wall, their average kinetic energy increases.

C The particles expand when they hit the wall.

D The particles collide with each other.

12. June/2022/Paper_23/No.15

A gas in a container is cooled but the volume of the gas does not change.

Which row describes the changes in the pressure of the gas and the kinetic energy of the gas particles?

	pressure of gas	kinetic energy of gas particles
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

13. June/2022/Paper_31/No.6(b)

(b) Describe the molecular structure of the wax in terms of the arrangement, separation and motion of its molecules when it is a solid and when it is a gas.

solid wax .....

.....

wax as a gas .....

.....

[6]

14. June/2022/Paper_32/No.5(c)

(c) A student uses a microscope to view a small particle in the liquid. Fig. 5.2 shows the path of the particle.

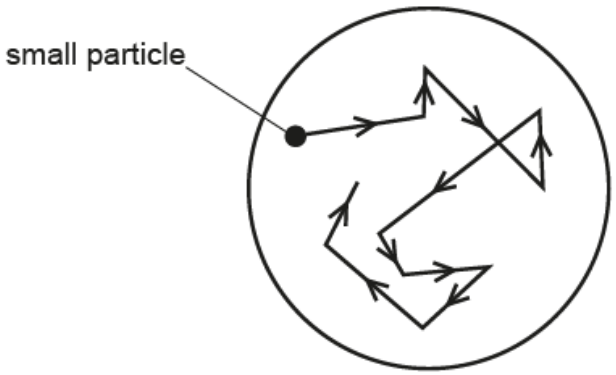


Fig. 5.2

(i) State the name given to the motion of the small particle.

..... [1]

(ii) Explain why the small particle moves as shown in Fig. 5.2.

.....

..... [2]

15. June/2022/Paper_33/No.4

(a) State and explain **one** application of thermal expansion.

You may draw a diagram to support your answer.

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..... [2]

(b) Fig. 4.1 shows a flask with air trapped inside it.

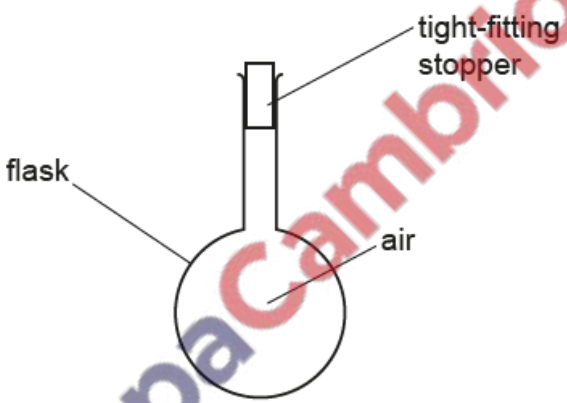

Fig. 4.1

Initially, the flask and air are at room temperature. The flask is then cooled in a refrigerator.

(i) State the change in the pressure of the air in the flask as the air cools.

..... [1]

(ii) Explain your answer to **(b)(i)**. Use your ideas about air molecules.

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..... [3]

[Total: 6]

16. June/2022/Paper_43/No.4

(a) Fig. 4.1 shows apparatus used to observe the motion of smoke particles (Brownian motion).

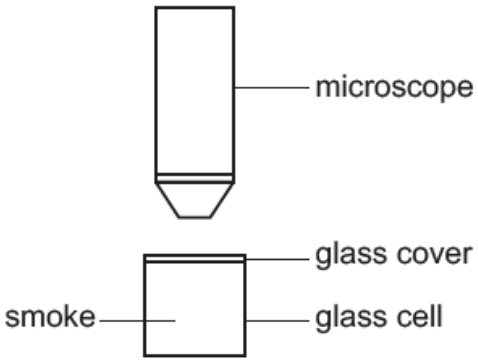

Fig. 4.1

The glass cell has light shining on it from the side.

The smoke particles are seen as bright specks of light when looking through the microscope.

(i) Draw the path of **one** of the bright specks of light.

[2]

(ii) Explain, in terms of forces and the motion of air molecules, the cause of the motion of the smoke particles.

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..... [4]

(b) The temperature of the air in a sealed glass container is increased.

(i) Explain, in terms of molecules, why the internal energy of the air increases.

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..... [1]

(ii) Explain, in terms of molecules, why the pressure of the air also increases.

.....

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..... [2]

[Total: 9]