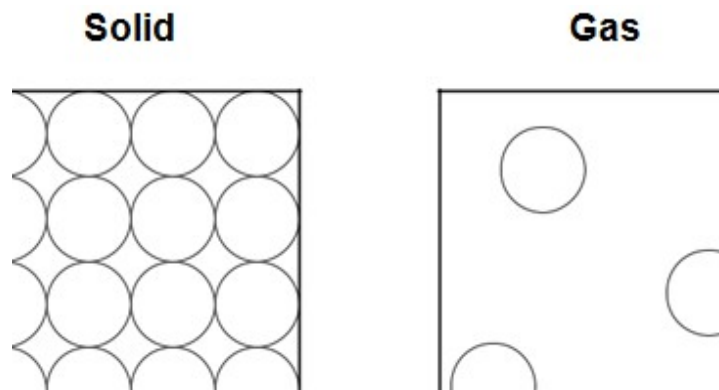


Particle Motion in Gases 1

Q:1 (a) The diagrams show the arrangement of the particles in a solid and in a gas.

Each circle represents one particle.



(a) (i) Complete the diagram below to show the arrangement of the particles in a liquid.



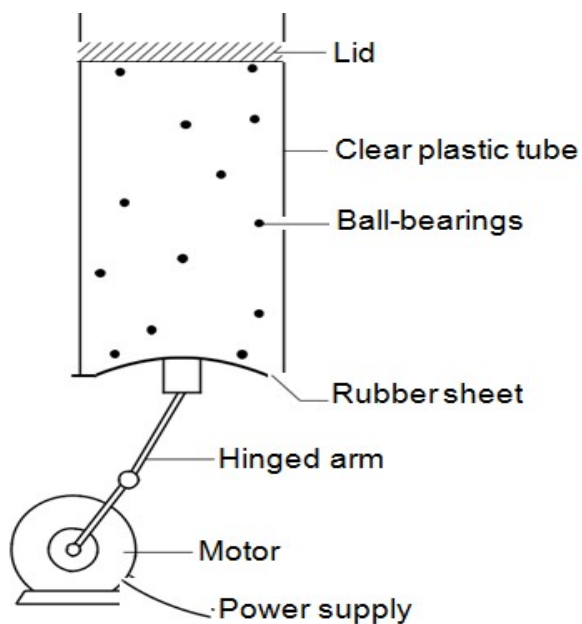
(2 marks)

(a) (ii) Explain, in terms of the particles, why gases are easy to compress.

(2 marks)

(b) The diagram below shows the model that a science teacher used to show her students that there is a link between the temperature of a gas and the speed of the gas particles.

The ball-bearings represent the gas particles. Switching the motor on makes the ball-bearings move around in all directions.



(b) (i) How is the motion of the ball-bearings similar to the motion of the gas particles?

(1 mark)

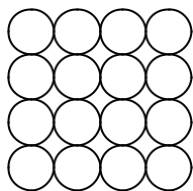
(b) (ii) The faster the motor runs, the faster the ball-bearings move. Increasing the speed of the motor is like increasing the temperature of a gas.

Use the model to predict what happens to the speed of the gas particles when the temperature of a gas is increased.

(1 mark)

Q:2 According to kinetic theory, all matter is made up of small particles. The particles are constantly moving. Diagram 1 shows how the particles may be arranged in a solid.

Diagram 1



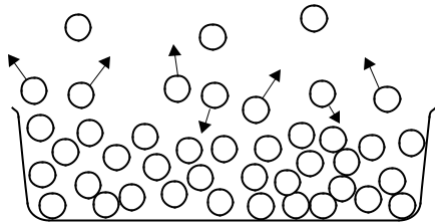
(a) One kilogram of a gas has a much larger volume than one kilogram of a solid.

Use kinetic theory to explain why.

(4 marks)

(b) Diagram 2 shows the particles in a liquid. The liquid is evaporating.

Diagram 2



(b) (i) How can you tell from Diagram 2 that the liquid is evaporating?

(1 mark)

(b) (ii) The temperature of the liquid in the container decreases as the liquid evaporates. Use kinetic theory to explain why.

(3 marks)

Q:3 In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.

The information in the box is about the properties of solids and gases.

Solids:

- have a fixed shape
- are difficult to compress (to squash).

Gases:

- will spread and fill the entire container
- are easy to compress (to squash).

Use your knowledge of kinetic theory to explain the information given in the box.

You should consider:

- the spacing between the particles
- the movement of individual particles
- the forces between the particles.

[6 marks]