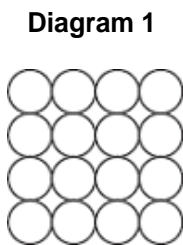


- Q1.** According to kinetic theory, all matter is made up of small particles. The particles are constantly moving.

Diagram 1 shows how the particles may be arranged in a solid.



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

Use kinetic theory to explain why.

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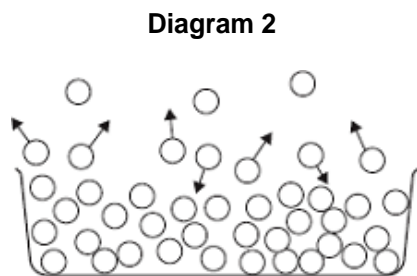
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(4)

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



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

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(1)

- (ii) The temperature of the liquid in the container decreases as the liquid evaporates.

Use kinetic theory to explain why.

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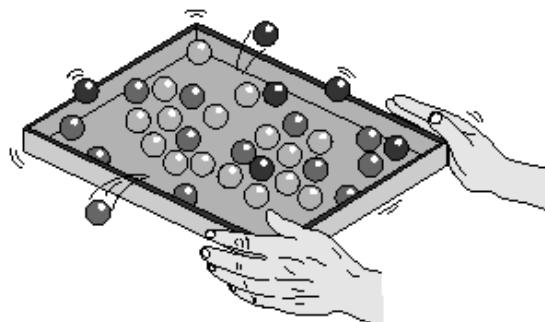
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(3)
(Total 8 marks)

- Q2.** (a) The diagram shows a tray of marbles being shaken from side to side. As this happens some of the marbles jump out of the tray.



Explain how the tray of marbles is acting as a model for the evaporation of a liquid.

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(2)

- (b) Before giving an injection, a nurse dabs some alcohol onto the patient's arm. This makes the patient's skin feel cold.

Explain what happens to make the patient's skin feel cold.

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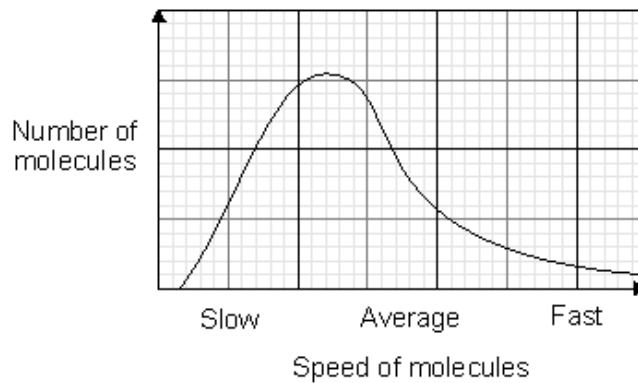
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(2)

- (c) The graph shows that the molecules in a liquid do not all have the same speed.



Use the information in the graph to explain why a liquid cools down when it evaporates.

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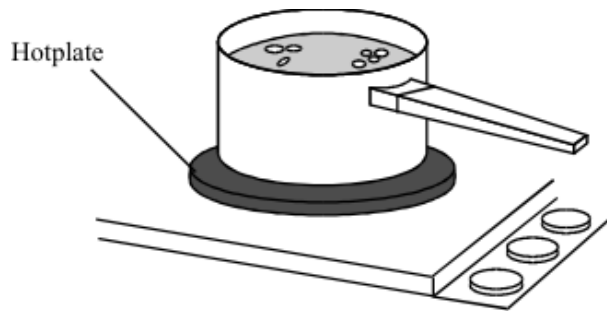
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(5)
(Total 9 marks)

Q3. The drawing shows water being heated in a metal saucepan.



- (a) Explain, in terms of the particles in the metal, how heat energy is transferred through the base of the saucepan.

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(2)

- (b) Energy is transferred through the water by convection currents. Explain what happens to cause a convection current in the water. The answer has been started for you.

As heat energy is transferred through the saucepan, the water particles at the bottom

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(3)

- (c) Some energy is transferred from the hotplate to the air by *thermal radiation*. What is meant by *thermal radiation*?

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(1)

(Total 6 marks)

