Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic : 14_Particle Model

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Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

* A student needs to determine the specific heat capacity of water.

Figure 12 shows some of the equipment the student uses.



Figure 12

Describe the method the student should use to determine the specific heat capacity of water.

Your description should include, with reasons,

- any other equipment needed
- the measurements needed.

You may draw a diagram if it helps your answer.

(6)

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(Total for question = 6 marks)

Q2.

Describe, in terms of particles, **two** differences between a solid and a liquid of the same substance.

(2)

1 .....

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2 .....

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(Total for question = 2 marks)

Q3.

Complete each box in Figure 1 to show how particles are arranged in a solid, liquid and gas.
One particle in each box has been drawn for you.

(3)

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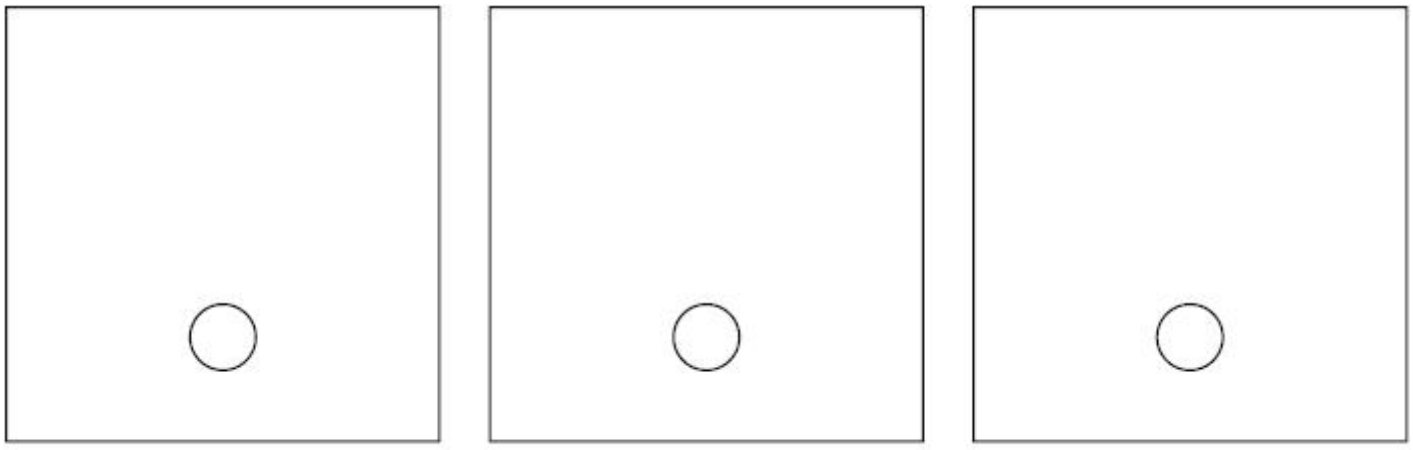


Figure 1

(Total for question = 3 marks)

Q4.

Figure 13 gives information about the density of aluminium.

	density in g/cm^3
solid aluminium	2.70
liquid aluminium	2.38

Figure 13

Explain the difference between the density of solid aluminium and the density of liquid aluminium in terms of the arrangement of particles.

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(Total for question = 2 marks)

Q5.

Figure 11 shows some water in a measuring cylinder and a lump of iron.

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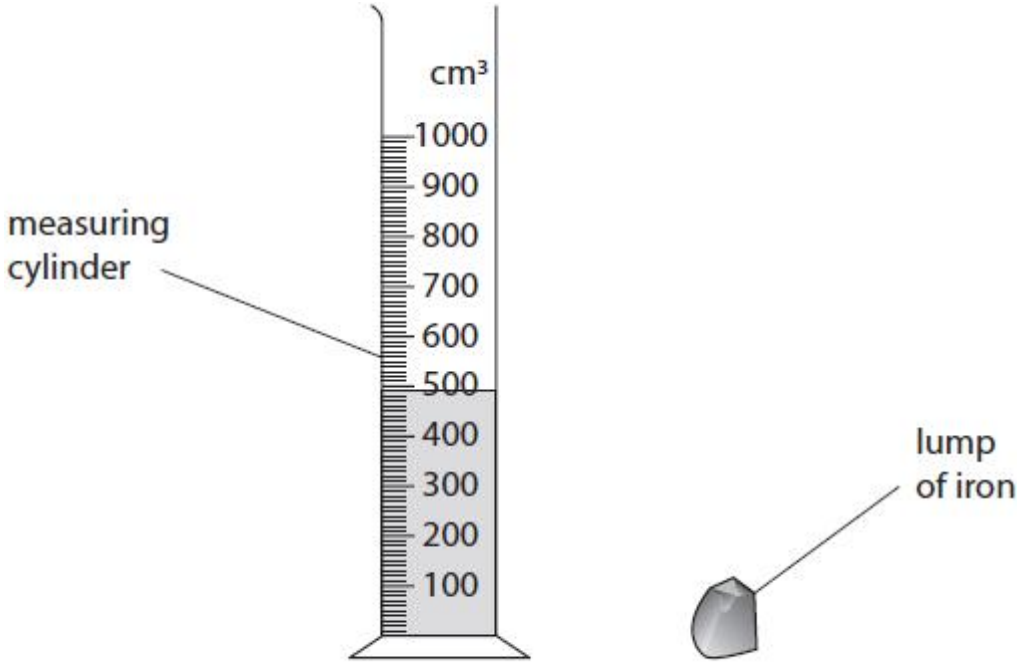


Figure 11

The lump of iron is lowered fully into the water.

The water level in the measuring cylinder rises to 530 cm^3.

The density of iron is 7.9 g / cm^3.

To find the mass of the lump of iron.

You would use the equation

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

A piece of wood has a similar shape and volume to the lump of iron.

The density of the wood is 0.82 g / cm^3.

The density of water is 1.00 g / cm^3

Explain why the method used for the lump of iron cannot be used to determine the mass of the piece of wood.

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(Total for question = 2 marks)

Q6.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Solid, liquid and gas are states of matter.

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Which process describes the change from a solid to a liquid?

(1)

- ☒ **A** melting
- ☒ **B** freezing
- ☒ **C** evaporation
- ☒ **D** condensation

(Total for question = 1 mark)

Q7.

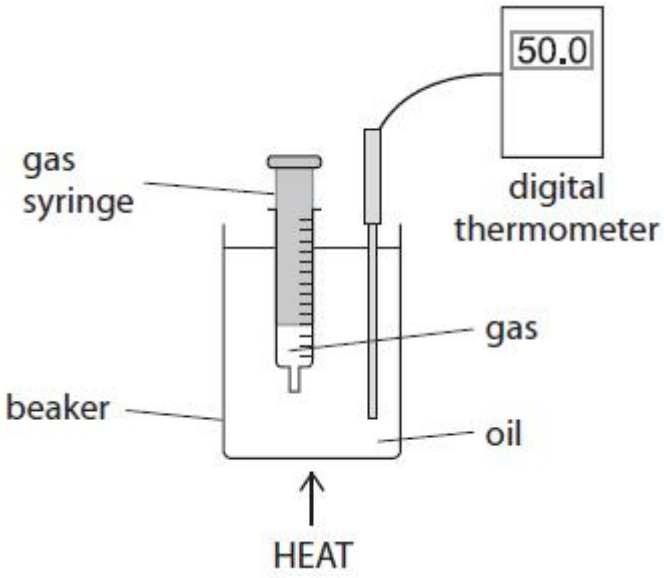
(a) Complete the sentence by putting a cross (☒) in the box next to your answer.

Kinetic theory describes gases as particles that

(1)

- ☒ **A** only vibrate
- ☒ **B** do not move at absolute zero
- ☒ **C** only move at high temperatures
- ☒ **D** only move at low temperatures

(b) The apparatus shown in the diagram is used to investigate how the volume of a gas changes with temperature when its pressure is constant.



(i) Explain how the particles in the gas exert a pressure on the syringe.

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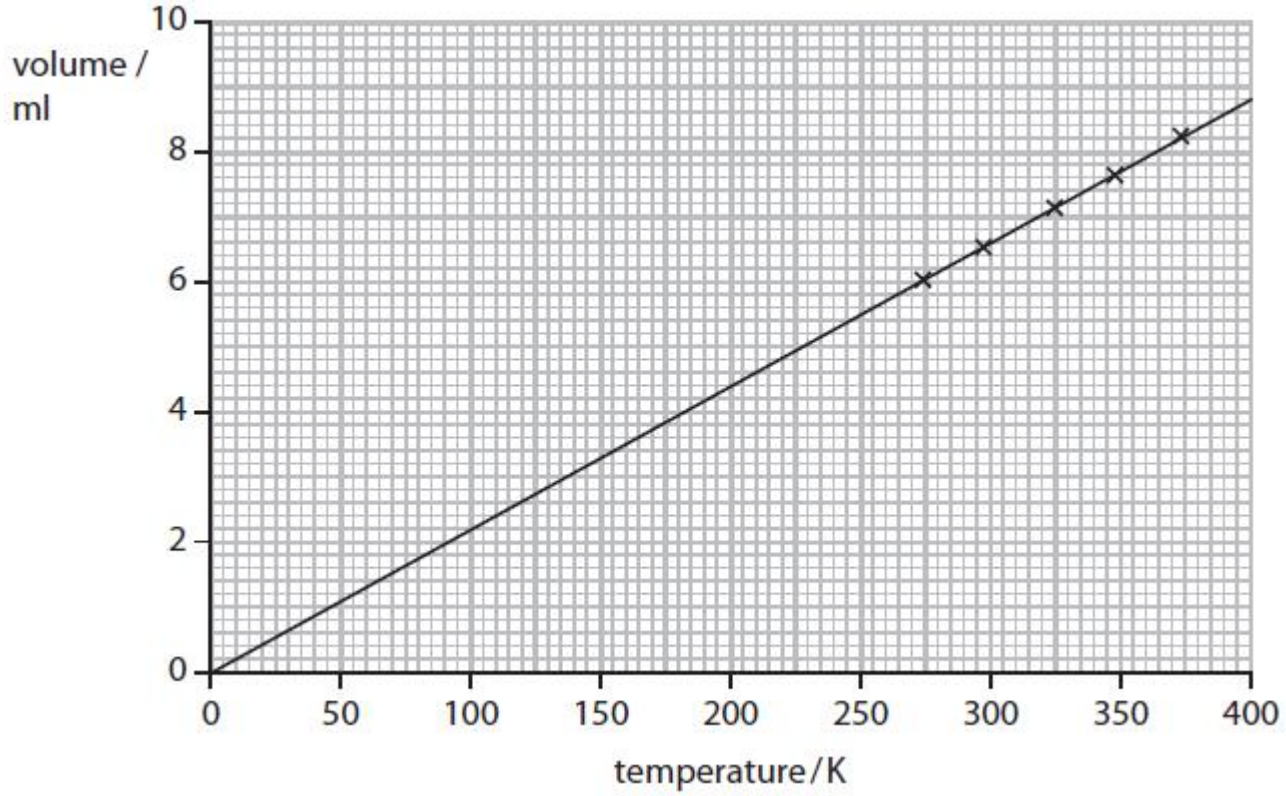
(ii) The results from the investigation are given in the table.
Fill in the gap in the table.

(1)

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volume / ml	temperature / °C	temperature / K
6.0	0.0	273
6.5	25	298
7.1	50	
7.6	75	348
8.2	100	373

(iii) The volume of the gas is plotted against the temperature in Kelvin and a line of best fit is drawn.



Describe what this line of best fit shows about how the volume of the gas varies with temperature.

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(c) When the temperature of the gas is 298 K, the volume of the gas in the syringe is 6.5 ml.

Calculate the volume of gas when its temperature is increased to 450 K.

Use the equation $V_2 = \frac{V_1 T_2}{T_1}$

(2)

volume of gas = ... ml

(Total for Question = 8 marks)

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