Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Particle Model Of Matter (Low Demand)

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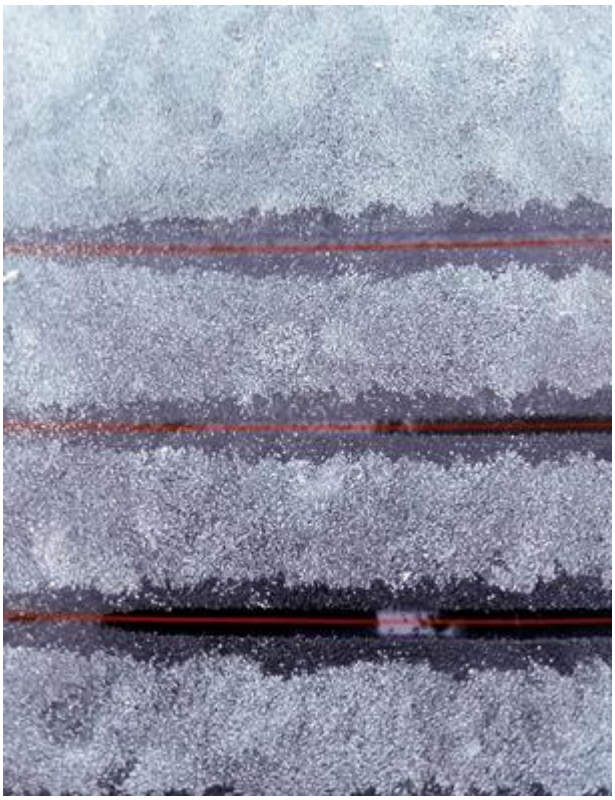
Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

Figure 1 shows solid ice on a car's rear window.

Figure 1



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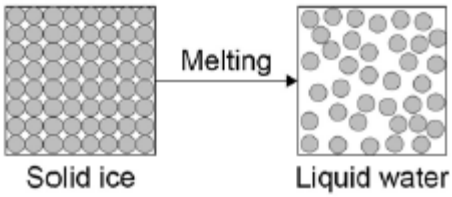
The glass window contains an electrical heating element.

(a) Use the particle model in **Figure 2** to describe how the heating element causes the arrangement of the ice particles to change as the ice melts.

Figure 2



You should include a description of how the particles are arranged in the solid ice and in the

water.

_____

_____

_____

_____

_____

_____

_____

_____

_____

(6)

(b) A car manufacturer tests different heating elements by measuring how long it takes ice to melt.

During the test some variables must be controlled.

Identify **two** control variables in the car manufacturer's test.

Tick **two** boxes.

The colour of the car	☐
The current in the heating element	☐
The mass of ice	☐
The size of the car	☐
The time taken for the ice to melt	☐

(2)

(c) Some of the energy supplied by the heater causes the ice to melt without the temperature of the ice increasing.

What is the name given to this energy supplied by the heater?

Tick **one** box.

Latent heat of freezing	☐
Latent heat of fusion	☐

Latent heat of vaporisation ☐

(1)

(d) When the heater is supplied with 120 J of energy each second, the internal energy of the ice increases by 45 J each second.

Use the following equation to calculate the efficiency of the heater.

$$\text{Efficiency} = \frac{\text{Output energy transfer}}{\text{input energy transfer}}$$

Give your answer to two decimal places.

_____

_____

_____

Efficiency = _____

(2)

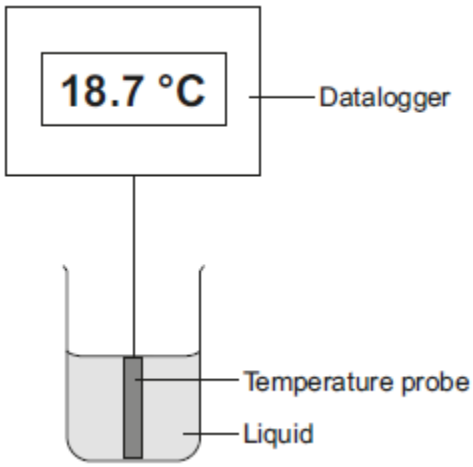
(Total 11 marks)

Q2.

A student investigated the cooling effect of evaporation.

She used the equipment (datalogger and probe) shown in **Figure 1** to measure how the temperature of a liquid changed as the liquid evaporated.

Figure 1



(a) Which type of variable was the temperature in this investigation?

Tick (✔) **one** box.

	Tick (✔)
control	
dependent	

independent	

(1)

(b) Before the investigation started, the student checked the accuracy of three different temperature probes. The student put the probes in a beaker of boiling water that had a temperature of 100.0 °C.
The readings from the three temperature probes are shown in **Figure 2**.

Figure 2

Probe A	Probe B	Probe C
99.8	100.1	103.2

Which **one** of the temperature probes, **A**, **B** or **C**, was **least** accurate?

Write the correct answer in the box.

Give a reason for your answer.

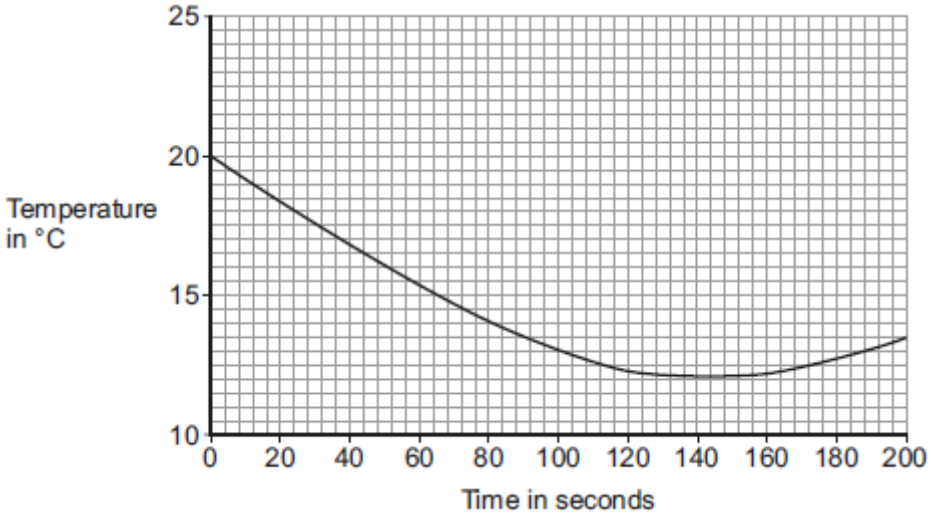
_____

_____

(2)

(c) **Figure 3** shows how the temperature recorded changed during the investigation.

Figure 3



(i) Use **Figure 3** to determine the lowest temperature recorded as the liquid evaporated.

Temperature = _____ °C

(1)

(ii) Use **Figure 3** to determine how long it took for all the liquid to evaporate.
Give a reason for your answer.

Time = _____ seconds

Reason: _____

_____

(2)

(iii) How would increasing the starting temperature of the liquid above 20 °C affect the rate of evaporation of the liquid?

_____

_____

(1)

(Total 7 marks)