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

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Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Q1.

A scientist cooled the air inside a container.

(a) The temperature of the air changed from 20 °C to 0 °C

The volume of the container of air stayed the same.

Explain how the motion of the air molecules caused the pressure in the container to change as the temperature decreased.

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(3)

(b) The air contained water that froze at 0 °C

The change in internal energy of the water as it froze was 0.70 kJ

The specific latent heat of fusion of water is 330 kJ/kg

Calculate the mass of ice produced.

Use the Physics Equations Sheet.

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Mass of ice = _____ kg

(3)

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(c) The air also contained oxygen, nitrogen and carbon dioxide.

Oxygen boils at −183 °C and freezes at −218 °C
Nitrogen boils at −195 °C and freezes at −210 °C
Carbon dioxide sublimates at −78 °C

The scientist continued to cool the air to a temperature of −190 °C

What is the state of each substance at −190 °C?

Tick (✓) **one** box for **each** row of the table.

Substance	**Solid**	**Liquid**	**Gas**
Oxygen			
Nitrogen			
Carbon dioxide			

(2)

(d) The air also contained a small amount of argon.

As the temperature of the air decreased from 20 °C to –190 °C the argon changed from a gas to a liquid to a solid.

Explain the changes in the arrangement and movement of the particles of the argon as the temperature of the air decreased.

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(6)

(Total 14 marks)

Q2.

A student wanted to determine the density of the irregular shaped object shown in **Figure 1**

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Figure 1

(a) Plan an experiment that would allow the student to determine the density of the object.

(6)

(b) Another student did a similar experiment.

He determined the density of five common plastic materials.

Table 1 shows the results.

Table 1

Plastic material	**Density in kg/m^3**
Acrylic	1200
Nylon	1000
Polyester	1380
Polystyrene	1040

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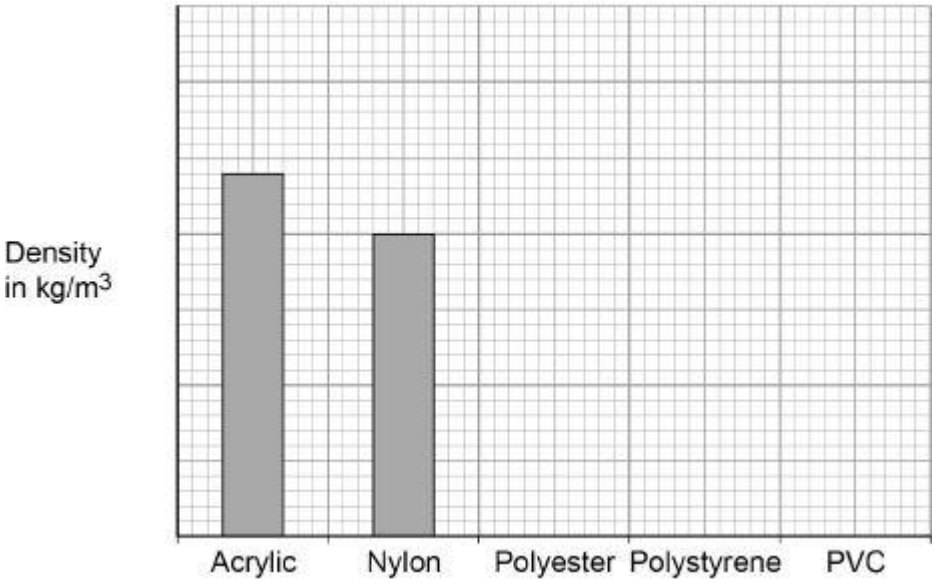
PVC	1100

Figure 2 shows the results plotted in a bar chart.

Figure 2



Complete **Figure 2**

You should:

- Write the correct scale on the y-axis.
- Draw the bars for polyester, polystyrene and PVC.

(4)

(c) The student is given a piece of a different plastic material.

The student determined the density of the material three times.

Table 2 shows the results.

Table 2

	Density in kg/m^3
1	960
2	1120
3	1040

Determine the uncertainty in the student's results.

_____

_____

Uncertainty = _____ kg/m^3

(2)

(Total 12 marks)

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